

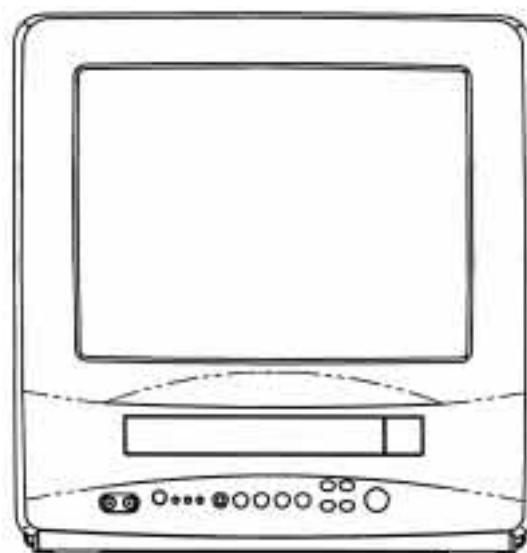
**DAEWOO**

# Service Manual

TV/VCR IN ONE BOARD

**CHASSIS : CN-140  
NTSC-M SYSTEM**

MODEL : TVZ 1321  
TVZ 1341  
TVZ 1341X



**DAEWOO ELECTRONICS CO., LTD.**

# SPECIFICATIONS

Format	: VHS standard	Video Horizontal	
Playback System	: 2 rotary heads(14F8N) 4 rotary heads(14F8N4), helical scanning system Luminance : FM azimuth recording Color Signal : Converted sub-carrier phase shift recording	Resolution	: More than 220 lines
		Audio Frequency	: SP : 100 Hz-10KHz LP : 100Hz-7KHz SLP : 100Hz-5KHz
Video Signal System	: NTSC-type color signal'	Signal-to-Noise Ratio	: Video : better than 43 dB (SP) Audio : better than 36 dB (with TV)
Audio Track	: 1 track	Operating Temperature	: 5°C-40°C
Tape Width	: 12.65 mm (1/2 inch)	Weight	: 13Kg(SET)
Tape Speed	: (SP) : 33.35 mm/s (1.5/16 ips) (LP) : 16.67mm/s (21/32 ips) (SLP) : 11.12 mm/s (7/16 ips)	Dimensions	: 379x400x381
Maximum Recording Time	: (SLP) : 480min. with T-160 Video cassette	Provided Accessories	: Remote control unit
Power Source	: 120V AC, 60Hz	Picture Tube	: A34JLL40x01
Power Consumption	: 60W	Sound Output Power	: 1W (80% Modulation) SPEAKER
Input Level	: Video : VIDEO IN jack(RCA) 1.0Vp-p, 75Ω unbalanced Audio : AUDIO IN jack (RCA) -3.8dBm. over 100K OHM unbalanced		
TV Tuner	: VHF input CH2-CH13 Cable channels "A" - "W" 75Ω unbalanced UHF input CH14-CH 69		

\* Design and specification are subject to change without notice. our legal obligations.

## • Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

### 1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

### 2. Dielectric strength test.

Confirm specified dielectric or strength or greater between power cord plug prongs and exposed accessible parts of the set(RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) See table below.

### 3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance ( $d$ ), ( $d''$ ) between soldered terminals, and between terminals and surrounding metallic parts. see table below.

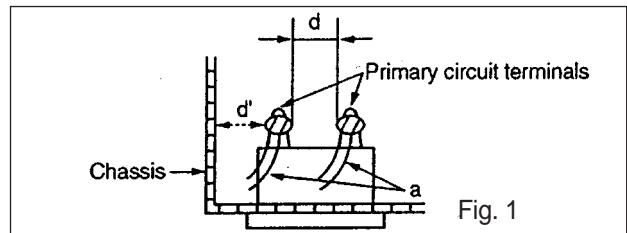


Fig. 1

Table 1 : Rating for selected areas

AC Line Voltage	Region	Insulation Resistance	Dielectric Strength	Clearance Distance ( $d$ ), ( $d''$ )
100V	Japan	$\geq 1M\Omega/500 V DC$	1kV 1 minute	$\geq 3$ mm
110 to 130V	USA & Canada	---	900V 1 minute	$\geq 3.2$ mm
* 100 to 250V	South America	$\geq 10 M\Omega/500 V DC$	4 kV 1 minute	$\geq 6$ mm( $d$ ) $\geq 8$ mm( $d''$ ) (z:Power cord)

Note : This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

### 4. Leakage current test

Confirm specified or lower leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.)

Measuring Method : (Power ON)

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z.

See figure and following table:

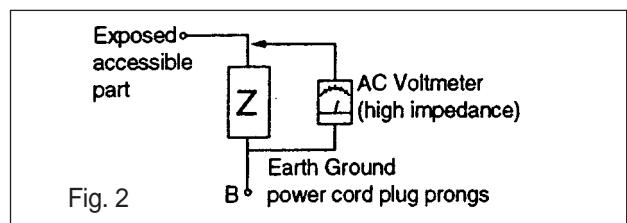


Fig. 2

Table 2 : Leakage current ratings for selected areas

AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to :
100V	Japan	$\bigcirc - \sim \sim \bigcirc$ 1k $\Omega$	$i \leq 1mA$ rms	Exposed accessible parts
110 to 130 V	USA & Canada	$\bigcirc - [1.5\mu F] - [1.5k\Omega] - \bigcirc$	$i \leq 0.5 mA$ rms	Exposed accessible parts
100 to 130 V	South America	$\bigcirc - \sim \sim \bigcirc$ 2k $\Omega$	$i \leq 0.7 mA$ peak $i \leq 2mA$ dc	Antenna earth terminals
		$\bigcirc - \sim \sim \bigcirc$ 50k $\Omega$	$i \leq 0.7 mA$ peak $i \leq 2mA$ dc	Other terminals

Note : This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

# IMPORTANT SERVICE NOTES

## 1. X-RAY RADIATION PRECAUTION

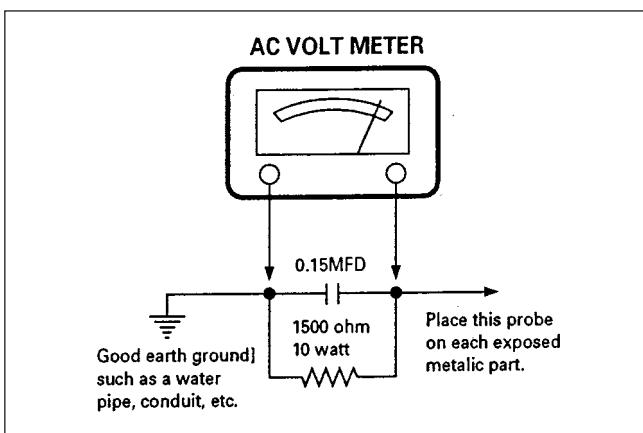
- 1) Excessive high voltage can produce potentially hazardous X-RAY RADIATION to avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 24.4kv (27.5kv) at zero beam current (minimum brightness) under a 120V AC power source. The high voltage must not, under any circumstance, exceed 27kv (28.5kv). Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure on page 4 of this manual. It is recommended as parts of the service record. It is important to use an accurate and reliable high voltage meter.
- 2) This receiver is equipped with X-RADIATION PROTECTION circuit which prevents the receiver from producing an excessively high voltage even if the B+ voltage increases abnormally. Each time the receiver is serviced, X-RADIATION PROTECTION circuit must be checked to determine that the circuit is properly functioning, following the X-RADIATION PROTECTION CIRCUIT CHECK procedure on page 4 of this manual.
- 3) The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION PROTECTION, the replacement tube must be exactly the same type tube as specified in the parts list.
- 4) Some parts in the receiver have special safety-related characteristics for X-RAY RADIATION PROTECTION. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

## 2. SAFETY PRECAUTION

**WARNING :** Service should not be attempted by anyone unfamiliar with the necessary precautions on this receiver. The following are the necessary precaution to be observed before servicing.

- 1) Since the chassis of this receiver has hazardous potential to ground whenever the receiver is plugged in (floating chassis), an isolation transformer must be used during service to avoid shock hazard.
- 2) Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled. Use shatter-proof goggles and keep picture tube away from the body while handling.
- 3) When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as; non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.
- 4) Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, screw-heads, metal overlays, control shafts etc. to be sure the set is safe to operate without danger of electrical shock. (Plug the AC line cord directly into a 120V AC outlet do not use a line isolation transformer during this check). Use an AC voltmeter having 5000 ohms per volt or more sensitivity in the following manner.

Connect at 1500 ohm watt resistor, paralleled by a 0.15 mfd, AC type capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1500 ohm resistor and 0.15 mfd capacitor. Reverse the AC plug at the AC output and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.3 volts RMS. this corresponds to 0.2 milliamp AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



## 3. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified on the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-ray radiation or other hazards.

## 4. SERVICE NOTES

- 1) When replacing parts or circuit boards, clamp the lead wires to terminals before soldering.
- 2) When replacing a high wattage resistor (metal oxide film resistor) in the circuit board, keep the resistor min 1/2 inch away from circuit board.
- 3) Keep wires away from high voltage or high temperature components.

# GENERAL ADJUSTMENT

## 1. GENERAL

In the majority of cases, color television will need only slight touch-up adjustment upon installation. Check the basic characteristics such as height, focus and sub-bright. Observe the picture for good black and white details without objectionable color shading. If color shading is evident, demagnetize the receiver. If color shading still persists, perform purity and convergence adjustments. This should be all that is necessary to achieve optimum receiver performance.

## 2. VERTICAL HEIGHT ADJUSTMENT

- 1) Tune in an active channel.
- 2) Adjust brightness and contrast control for a good picture.
- 3) Adjust vertical height control (R304) for approximately one half inch over scan at top and bottom of picture screen.

## 3. FOCUS ADJUSTMENT

- 1) Tune in an active channel.
- 2) Adjust brightness, sharpness and contrast controls for a good picture, sharp scanning lines and/or sharp picture.

## 4. RF AGC ADJUSTMENT

- 1) Tune in an active channel.
- 2) Using the attenuator, apply the signal of 60dB $\mu$ V to the Antenna input terminal
- 3) Turn RF AGC control (R106) so that it is  $1.0V \pm 0.3V$  lower than maximum voltage.

## 5. HIGH VOLTAGE CHECK

High voltage is not adjustable but must be checked verify that the receiver is operating within safe and efficient design limitations as specified :

- 1) Operate receiver for at least 15 minutes at 100-140V AC line.
- 2) Set brightness, sharpness, contrast and color controls to minimum position (Zero beam).
- 3) Connect an accurate high voltage meter to CRT anode. The reading should be as follows.

13"	24KV~26KV
20"	26KV~28KV

If a correct reading cannot be obtained, check circuitry for malfunctioning components.

## 6. X-RADIATION PROTECTION CIRCUIT TEST

When service has been performed on the horizontal deflection system, high voltage system or B+ system, the X-RADIATION PROTECTION circuit must be tested for proper operation as follows:

- 1) Operate the receiver for at least 15 minutes at 120V AC line.
- 2) Confirm high voltage protector when R409 of power PCB is connected to  $30k\Omega(1/4w)$  in parallel.
- 3) If high voltage protector is operated, remove  $30k\Omega(1/4w)$  and confirm whether high voltage protector is still on.
- 4) Confirm normal operation on sound and video when

R410 is shorted.

## 7. WHITE BALANCE ADJUSTMENT

- 1) Receive MONOSCOPE PATTERN signal.
- 2) Set the each BIAS VR (VR903, VR904, VR905) and DRIVE VR(VR901, VR902) to center position and Minimize SCREEN using SCREEN VR on the side of FBT.
- 3) Open LEVER SW(S901) of CRT PCB.
- 4) Make straight and horizontal line by pushing service key(V/H) on the SERVICE remocon.
- 5) Turn the SCREEN VR slowly until first color is brightened and turn the appropriate BIAS VR to the counter-clockwise until that line's color disappears.
- 6) Turn the SCREEN VR slowly again until another color is brightened and turn the appropriate BIAS VR to the counter-clockwise until that line's color disappears.
- 7) Turn the SCREEN VR slowly again until third color is brightened and turn the appropriate BIAS VR to the counter-clockwise until that line's color disappears.
- 8) Adjust the BIAS VR to become white appropriate line by turning the BIAS VR in concerned with step 4-6, and 4-7 to clock direction (to be brightened).
- 9) Although you did step 4-5, 4-6, 4-7,  
If it is not bright each step's color but bright first color, stop turn the SCREEN VR at the position which color is hardly to be seen, and concerned BIAS VR to clock direction (to be brightened).
- 10) Turn LEVER SW(S901) of CRT PCB on.
- 11) Let the straight and horizontal line disappear by pushing service key(V/H) on the SERVICE remocon.
- 12) Set CONTRAST to maximum and set brightness to center, and adjust WHITE BALANCE using R's and B's DRIVE VR.
- 13) Inspect TRACKING for WHITE BALANCE by varying CONTRAST and brightness.  
If tracking not correct, Repeat step 4-5 to 4-9.

### NOTE :

1. When performing any adjustments to resistor controls and transformers use non-metallic screw driver or TV alignment tools.
2. Before performing adjustments TV set must be on at least 15 minutes.

# LEADLESS(CHIP) INSTRUCTIONS

## 1.LEADLESS(CHIP) COMPONENT REMOVAL INSTRUCTIONS

- The following procedures are recommended for the replacement of the leadless components used in this unit.

### 1-1. Preparation for replacement

#### a. Soldering Iron

Use a pencil-type soldering iron that uses less than 30 watts.

#### b. Solder

Eutectic solder (Tin 63%, Lead 37%) is recommended.

#### c. Soldering time

Do not apply heat more than 4 seconds.

#### d. Preheating

Leadless capacitor must be preheated before installation. (130°C~150°C, for about two minutes).

#### Note :

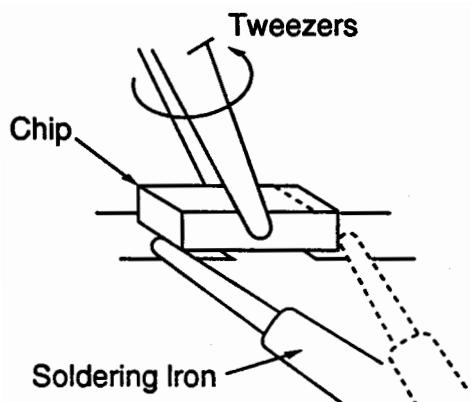
- Leadless components must not be reused after removal.
- Excessive mechanical stress and rubbing of the components electrode must be avoided.

### 1-2. Removing the leadless component (Resistors, Capacitors)

Grasp the leadless component body with tweezers and alternately apply heat to both electrodes. When the solder on both electrodes is melted, remove leadless components with a twisting motion.

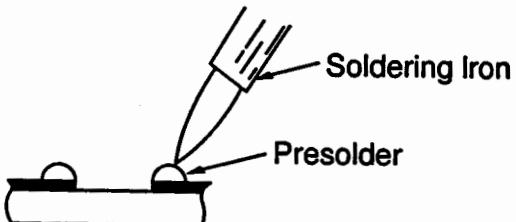
#### Note :

- Do not attempt to lift the component off the board until the component is completely disconnected from the board by a twisting action.
- Take care not to break the copper foil on printed board.



### 1-3. Installing the Leadless (chip) Component

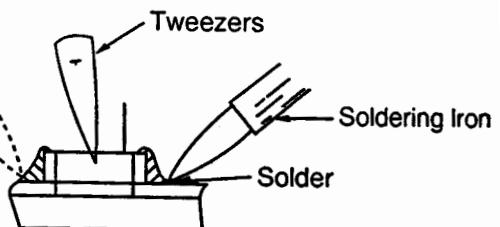
#### 1) Presolder the contact points of the circuit board.



- Press the part downward with tweezers and solder both electrodes as show below.

#### Note :

Do not glue the replacement leadless component to the circuit board.



## 2.LEADLESS (CHIP) COMPONENT IDENTIFICATION

### 2-1. Check the following before S. M. D Troubleshooting

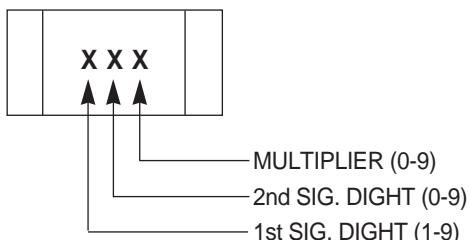
- Cracked Chipped component Body
- Cracked Separated Solder Joints
- Peeling end Terminations Fractured Leads

- Rejection of Solder from copper Pads or Component
- Foreign Matter on Copper Pads
- Solder Bridges

### 2-2. S.M.D (Surface Mounted Devices) Identification

#### 1) Chip Resistor Identification

\* Standard chip Resistor code



#### Examples

	1	2	3	
--	---	---	---	--

$$= 12 \times 10^3 (1000) = 12000\Omega \\ = 12K\Omega$$

	4	7	0	
--	---	---	---	--

$$= 47 \times 10^0 (1) = 47\Omega$$

#### 2) Chip Capacitor Identification

There is no identification of chip capacitor

**REMARK** Leadless (CHIP) components are identified on schematic by means of "(C)" adjacent to symbol numbers.

## CLEANING AND LUBRICATION OF DECK MECHANISM

### Cleaning and Lubrication

#### A. Cleaning the Tape Transport System

The following parts should be cleaned after every 500 hours of use.

- TENSION POLE
- S-GUIDE POST
- FE HEAD
- S-SLANT POLE
- VIDEO HEAD/DRUM
- T-SLANT POLE
- T-GUIDE ROLLER
- AC HEAD/AE HEAD
- T-GUIDE POST
- CAPSTAN SHAFT
- PINCH ROLLER

**NOTE :** After cleaning with alcohol, allow the parts to dry thoroughly before using a cassette tape.

#### B. Cleaning the Drive System

The following parts should be cleaned after every 500 hours of use.

- REEL TABLE
- T MAIN BRAKE
- S MAIN BRAKE
- T MAIN BRAKE
- CAPSTAN FLYWHEEL/PULLEY
- REEL PULLEY

#### C. Lubrication points

The following parts should be cleaned and lubricated after every 500 hours of use. apply one (1) or two (2) drops of oil. Refer to the "Replacement Parts List" for the stock number of the recommended oil.

- S REEL TABLE POST
- T REEL TABLE POST
- IDLER PULLEY

## 8. CONVERGENCE MAGNET ASSEMBLY POSITIONING

Convergence magnet assembly and rubber wedges need mechanical positioning following the figure 2.

### 8-1. COLOR PURITY ADJUSTMENT

**NOTE :** Before attempting any purity adjustments, the receiver should be operated for at least 15 minutes.

- 1) Demagnetize the picture tube using a degaussing coil.
- 2) Vary the CONTRAST and BRIGHTNESS controls to maximum.
- 3) Adjust RED and BLUE Bias controls (RJ04 and RJ24) to provide only a green raster. Adjust the GREEN BIAS control (RJ13) if necessary.
- 4) Loosen the clamp screw holding the yoke, and slide the yoke backward to provide a vertical green belt (zone) in the picture screen.

- 5) Remove the Rubber Wedges.
- 6) Rotate and spread the tabs of the purity magnet (see figure 2) around the neck of the picture tube until the green belt is in the center of the screen. At the same time, center the raster vertically.
- 7) Move the yoke slowly forward until a uniform green screen is obtained. Tighten the clamp screw on the yoke temporarily.
- 8) Check the purity of the red and blue raster by adjusting the BIAS controls.
- 9) Obtain a white raster, referring "CRT GRAY SCALE ADJUSTMENT" on the CRT board.
- 10) Proceed with convergence adjustment.

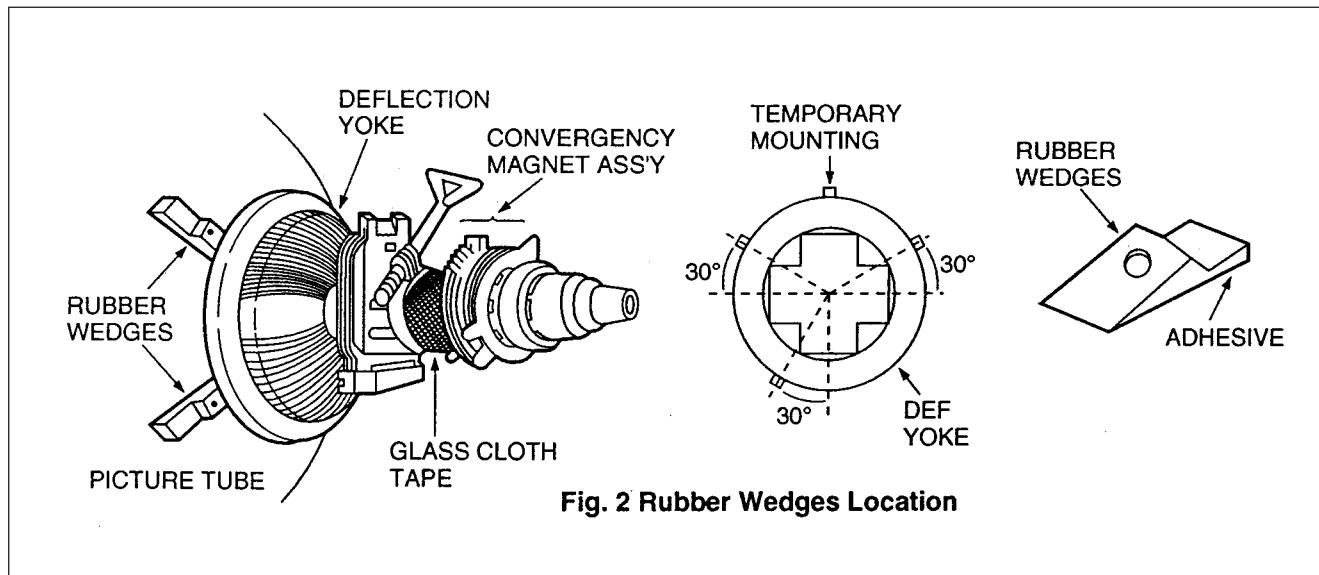


Fig. 2 Rubber Wedges Location

## 8-2. CONVERGENCE ADJUSTMENTS

**NOTE :** Before attempting any convergence adjustments, the receiver should be operated for at least 15 minutes.

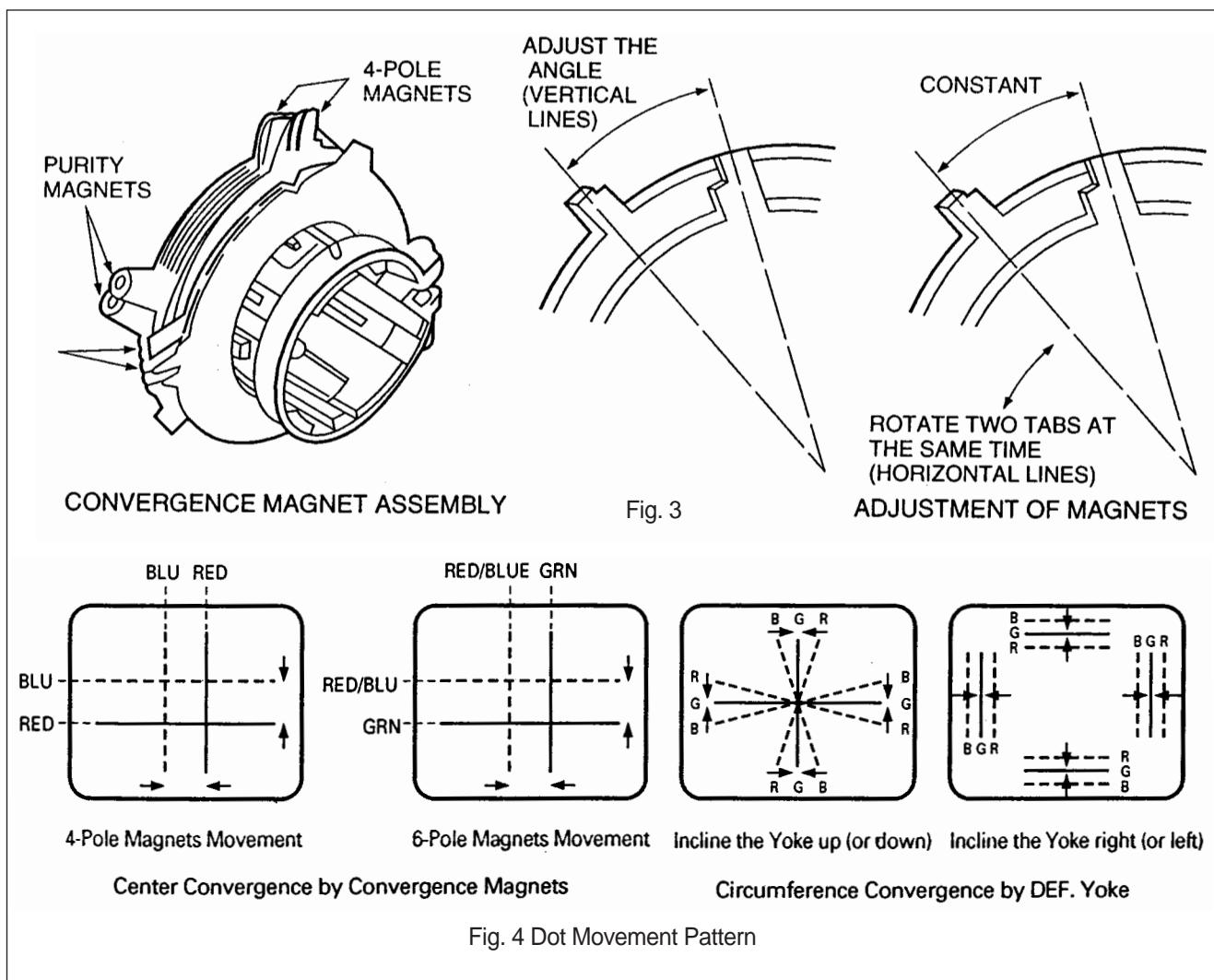
### A. CENTER CONVERGENCE ADJUSTMENT

- 1) Receive crosshatch pattern with a crosshatch signal generator.
- 2) Adjust the BRIGHTNESS and CONTRAST Controls for a good picture.
- 3) Adjust two tabs of the 4-Pole Magnets to change the angle between them (See Fig 3) and superimpose red and blue vertical lines in the center area of the picture screen. (See Fig. 4)
- 4) Turn both tabs at the same time keeping their angles constant to superimpose red and blue horizontal lines at the center of the screen. (See Fig. 4)
- 5) Adjust two tabs of 6-Pole Magnets to superimpose red/blue line with green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
- 6) Repeat adjustments 3) 4) 5) keeping in mind red, green and blue movement, because 4-Pole Magnets and 6-Pole Magnets interact and make dot movement complex.

### B. CIRCUMFERENCE CONVERGENCE ADJUSTMENT

**NOTE :** This adjustment requires Rubber Wedge Kit.

- 1) Loosen the clamping screw on the deflection yoke to allow to yoke to tilt.
- 2) Place a wedge as shown on figure 2 temporarily. (Do not remove cover paper on adhesive part of the wedge).
- 3) Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See Fig. 4) Push the mounter wedge into the space between picture and the yoke to hold the yoke temporarily.
- 4) Place other wedge into bottom space and remove the cover paper to stick.
- 5) Tilt front of the yoke right or left to obtain better convergence in circumference. (See Fig. 4).
- 6) Hold the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to hold the yoke.
- 7) Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
- 8) After placing three wedges, recheck overall convergence.
- Tighten the screw firmly to hold the yoke tightly in place.
- 9) Stick 3 adhesive tapes on wedges as shown in figure 2.



# MECHANICAL DISASSEMBLY(DECK)

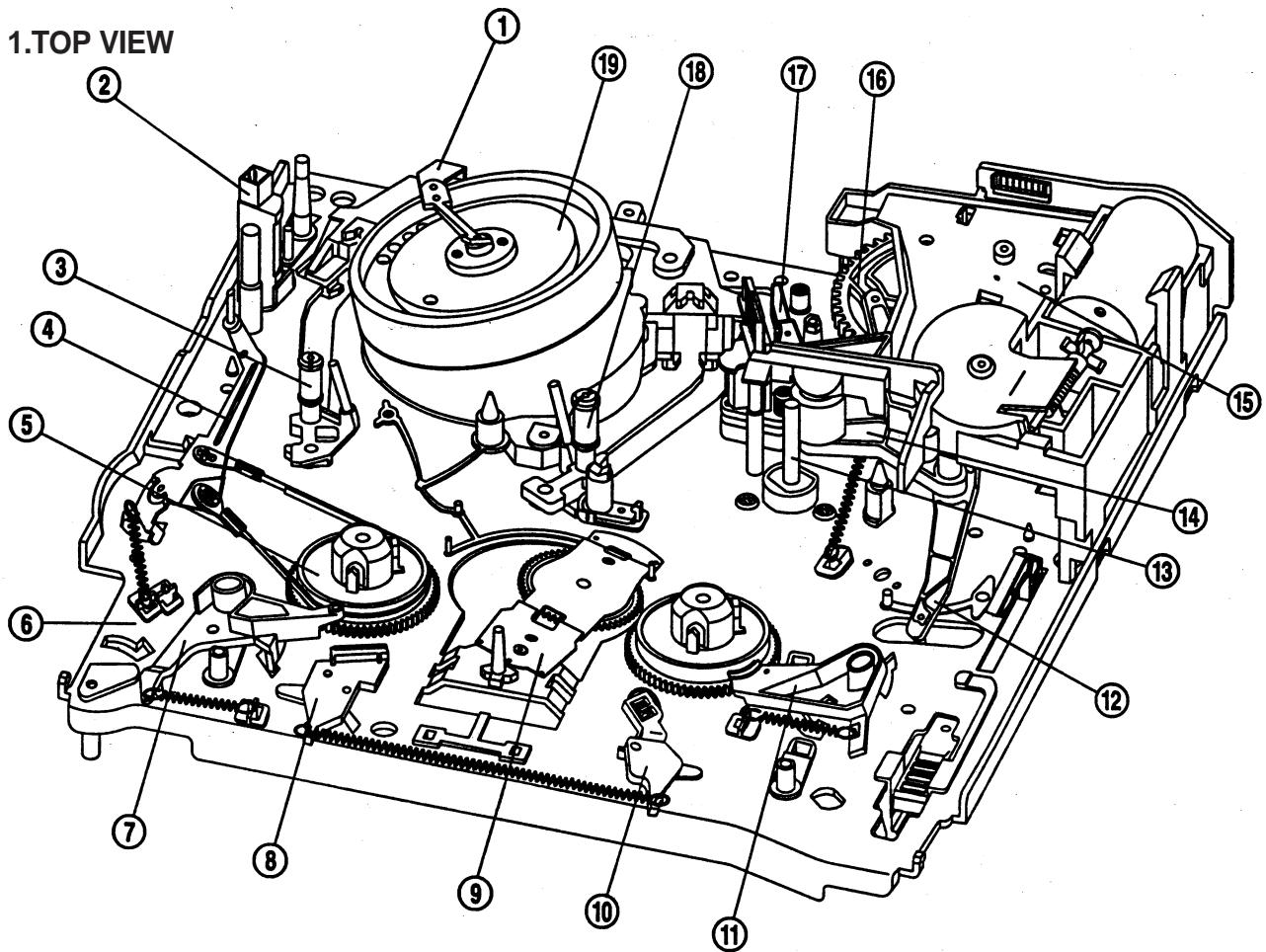


Fig. 9- Tape Transport Mechanism Identification (Top View)

- |                            |                             |
|----------------------------|-----------------------------|
| 1. Earth Bracket Ass'y     | 10. T-Main Brake Ass'y      |
| 2. FE Head                 | 11. T-Sub Brake Ass'y       |
| 3. S-Slant Pole Ass'y      | 12. Relay Lever             |
| 4. Tension Lever Ass'y     | 13. Capstan Motor           |
| 5. Reel Table              | 14. Pinch Lever Total Ass'y |
| 6. Main Base Ass'y         | 15. L/C Bracket Total Ass'y |
| 7. S-Sub Brake Ass'y       | 16. Cam Gear                |
| 8. S-Main Brake Ass'y      | 17. AC Head Total Ass'y     |
| 9. Idler Plate Total Ass'y | 18. T-Slant Pole Ass'y      |

# MECHANICAL DISASSEMBLY(DECK)

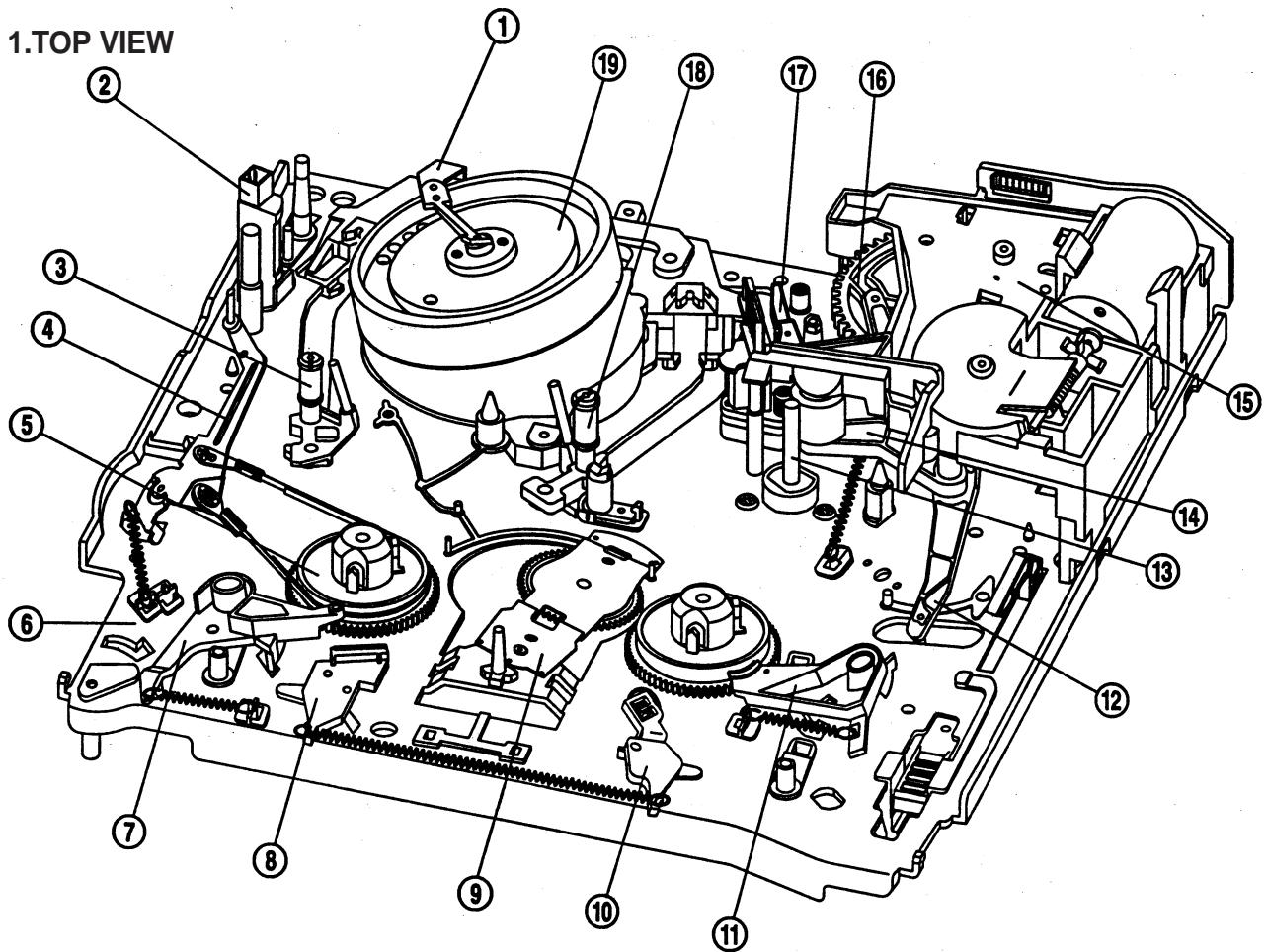


Fig. 9- Tape Transport Mechanism Identification (Top View)

- |                            |                             |
|----------------------------|-----------------------------|
| 1. Earth Bracket Ass'y     | 10. T-Main Brake Ass'y      |
| 2. FE Head                 | 11. T-Sub Brake Ass'y       |
| 3. S-Slant Pole Ass'y      | 12. Relay Lever             |
| 4. Tension Lever Ass'y     | 13. Capstan Motor           |
| 5. Reel Table              | 14. Pinch Lever Total Ass'y |
| 6. Main Base Ass'y         | 15. L/C Bracket Total Ass'y |
| 7. S-Sub Brake Ass'y       | 16. Cam Gear                |
| 8. S-Main Brake Ass'y      | 17. AC Head Total Ass'y     |
| 9. Idler Plate Total Ass'y | 18. T-Slant Pole Ass'y      |

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## 2.BOTTOM VIEW

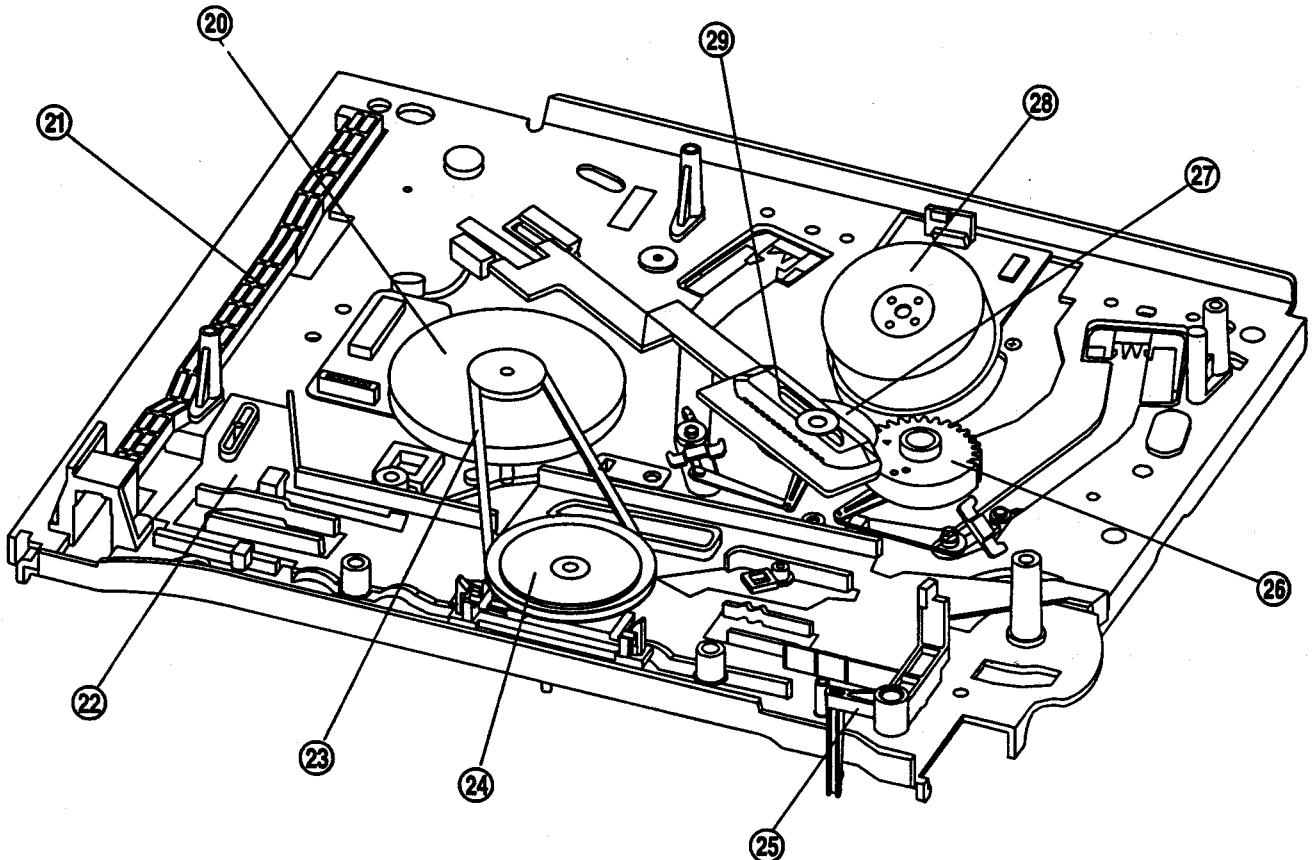


Fig. 10- Tape Transport Mechanism Identification (Bottom View)

20. Capstan Motor  
21. F/L Rack  
22. Connect Plate  
23. Reel Belt  
24. Reel Gear Total Ass'y

25. Record Safety Lever  
26. Loading Lever L  
27. Loading Lever R  
28. Drum Total Ass'y  
29. Loading Rack

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### 3.F/L MECHANISM VIEW

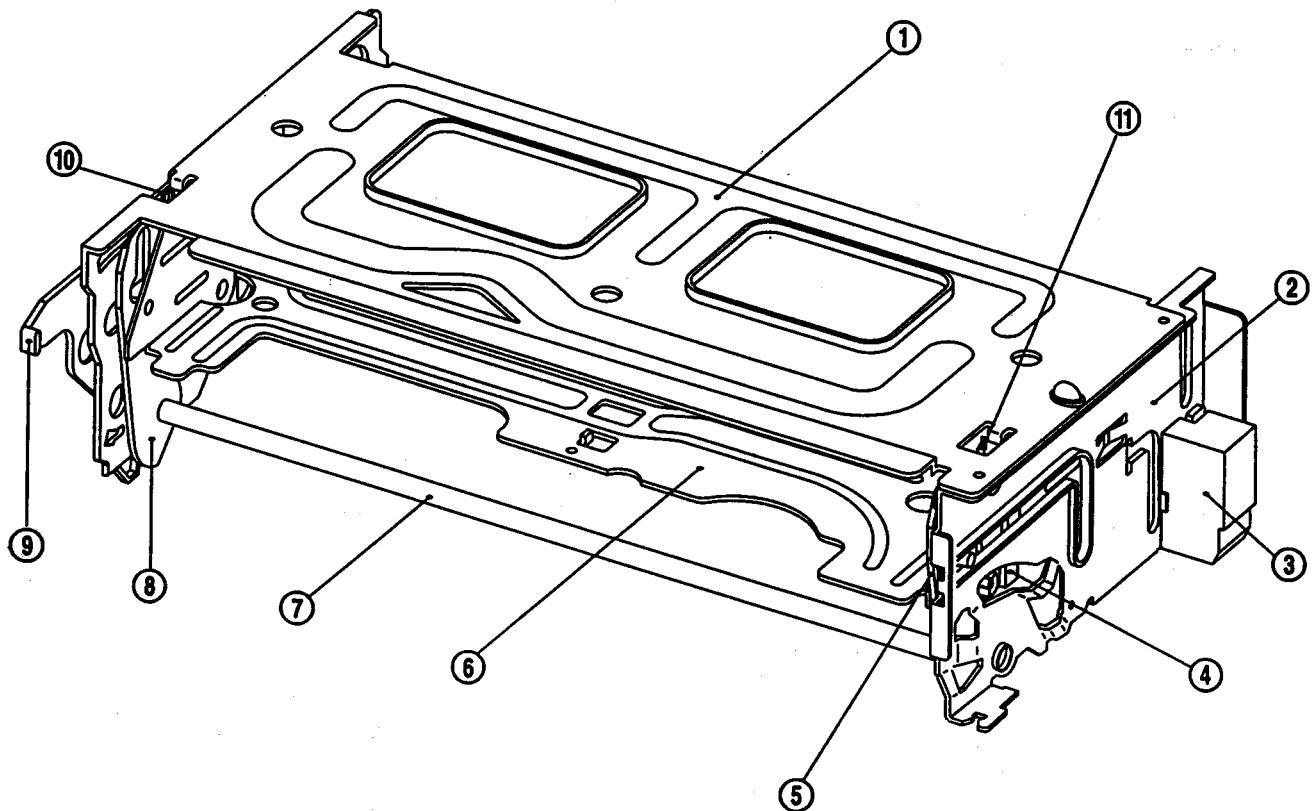


Fig. 11- Front Loading Mechanism Identification (Top view)

- |                     |                    |
|---------------------|--------------------|
| 1. Top Plate Ass'y  | 7. Loading Shaft   |
| 2. F/L Bracket R    | 8. Loading Lever L |
| 3. Prism Cap        | 9. Door opener     |
| 4. Release Lever    | 10. Safety Lever   |
| 5. Loading Lever R  | 11. Safety Lever R |
| 6. CST Holder Ass'y |                    |

#### 4. General removal view

##### Front Loading Mechanism Removal (Fig. 12)

###### NOTE :

The front loading mechanism must be in the eject position to remove it.

1. Remove two (2) screw holding the Front Loading Mechanism.
2. Lift the rear of the cassette loading mechanism (hole

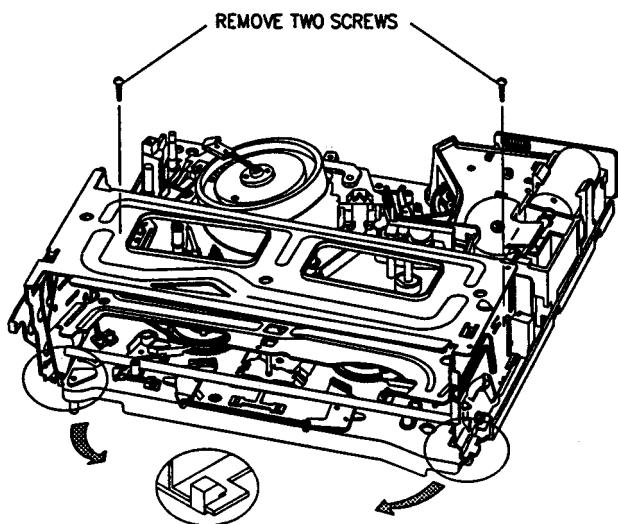


Fig. 12- Front Loading Mechanism Removal

parts for screw) to separate it from the Main Base.

##### Front Loading Mechanism disassembly

(Fig. 13~17)

1. Remove the front loading mechanism.
2. Remove one(1) screw holding the F/L bracket R and move the F/L bracket R in the direction of arrow to separate it from the top plate and the cassette holder

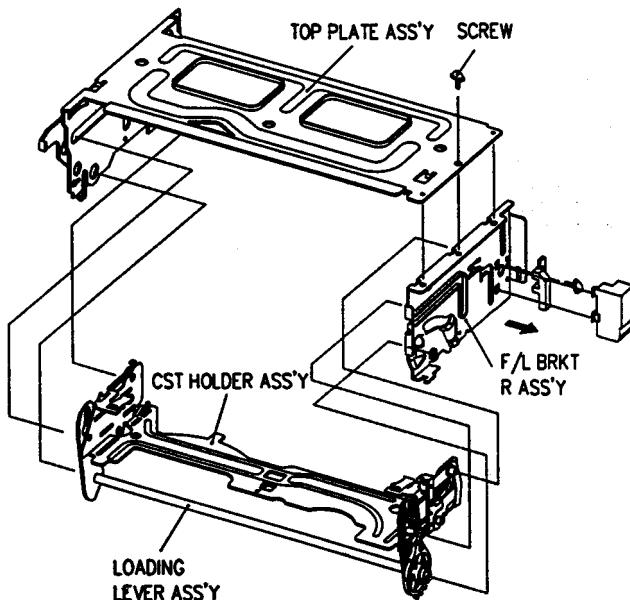


Fig. 13- Front loading mechanism disassembly

assembly.

3. Remove the cassette holder assembly (Fig. 13)
4. Remove the prism cap and remove one (1) screw hold-

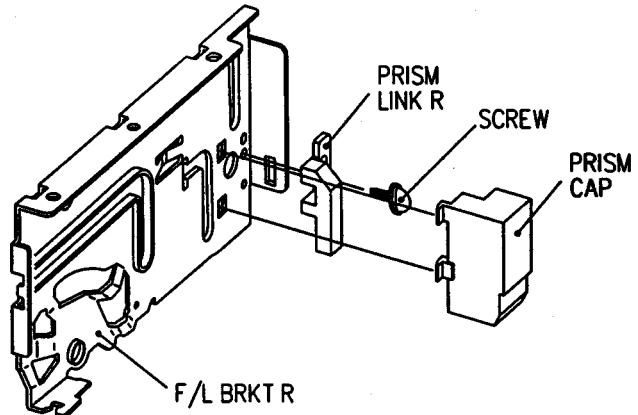


Fig. 14- F/L Brkt Disassembly

ing the prism link R and remove the prism link R from the F/L bracket R (Fig. 4)

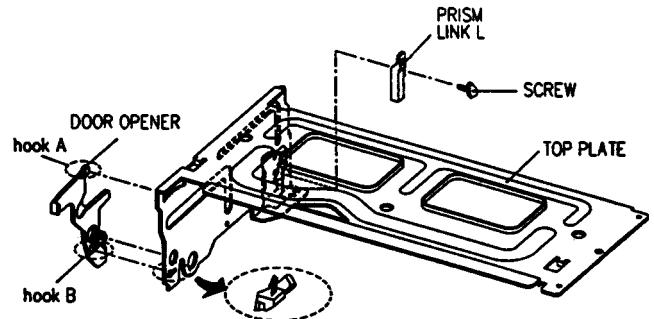


Fig. 15- Top Plate Disassembly

5. Remove one (1) screw holding the prism link L (Fig. 15).
6. Release hook B by pushing it in the direction of the arrow and remove the door opener (Fig. 15).
7. Press the linked section of the loading lever assembly in the direction of the arrow and remove the loading lever assembly (Fig. 16)
8. Remove the safety spring between the safety lever and the cassette holder (Fig. 16)
9. Remove the release spring between the release lever and the safety lever R (Fig. 16)

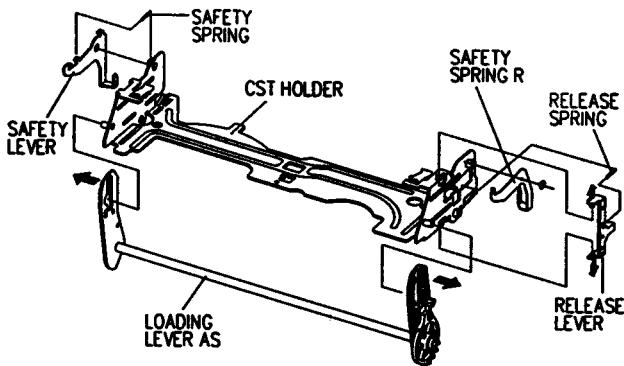


Fig. 16- Loading Lever Ass'y Disassembly

**NOTE :**

Reassemble the cassette loading mechanism using the reverse procedures. Confirm that the two (2) bosses on the left side of the cassette holder are inserted into the groove in the left side of the top plate. Insert the two (2) bosses on the right side into the F/L bracket R (Fig. 17)

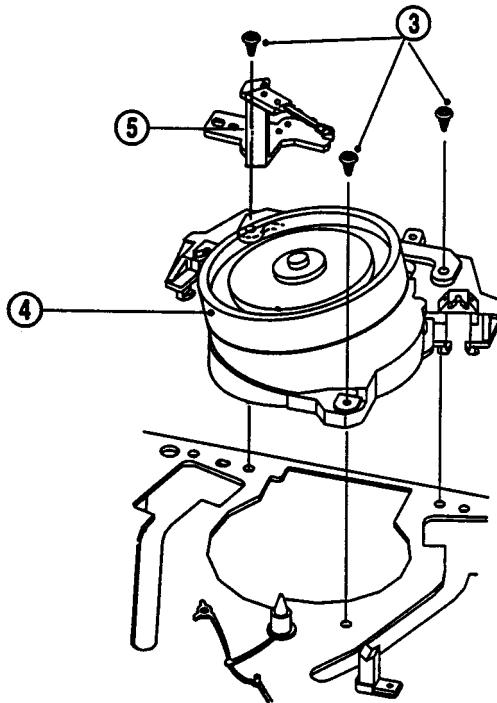


Fig. 18- Replacement of the Drum total Ass'y and Earth Brkt Ass'y

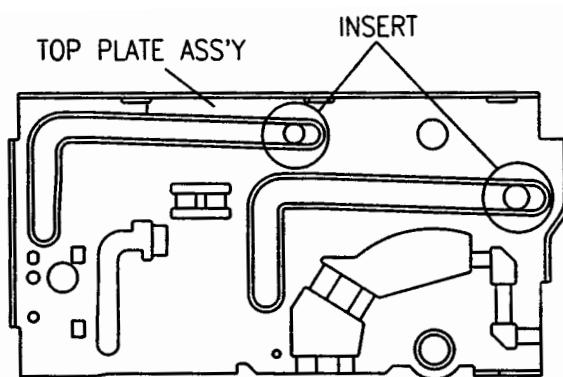


Fig. 17- F/L Brkt R

### Replacement of the Drum Assembly/Earth Bracket (fig. 18)

1. Remove three (3) screw (3).
2. Remove the earth bracket (5).
3. Carefully lift drum assembly (4) from the deck mechanism taking care not to damage or touch the video heads.

**NOTE :**

After reassembling the assembly, confirm that the tape runs smoothly and confirm all tape path adjustment procedures in the "Mechanical Adjustment" section of this service publication.

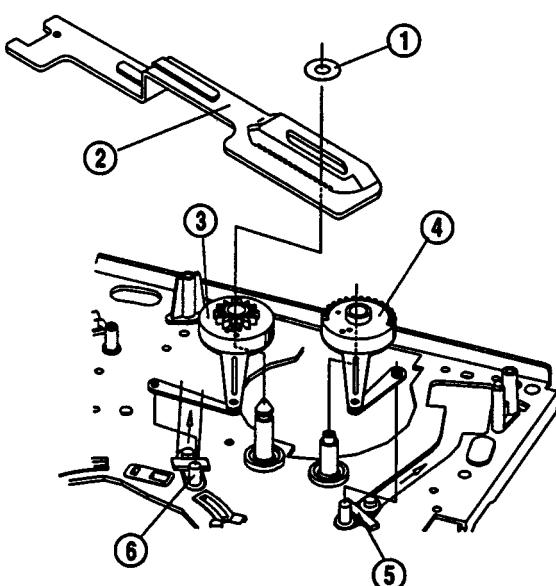


Fig. 19- Reel belt, Loading Rack, Loading Gears, S/T slant pole Removal

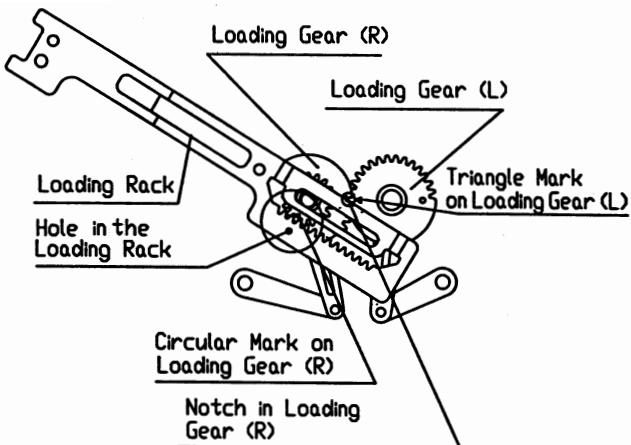


Fig. 20- Loading Gears/Loading Rack Alignment

#### A/C Head Assembly Removal (Fig. 21)

1. Remove one (1) nut hex from the A/C head assembly ① (Fig. 21)
2. Remove the A/C head assembly ② and remove the A/C head spring ③ from the A/C head assembly ②.

#### NOTE :

After reinstalling, perform all A/C Head adjustment procedures and all tape path alignment procedures in publication. Perform the "Audio Bias Level Adjustment" in the "Electrical Adjustment" section of this service manual.

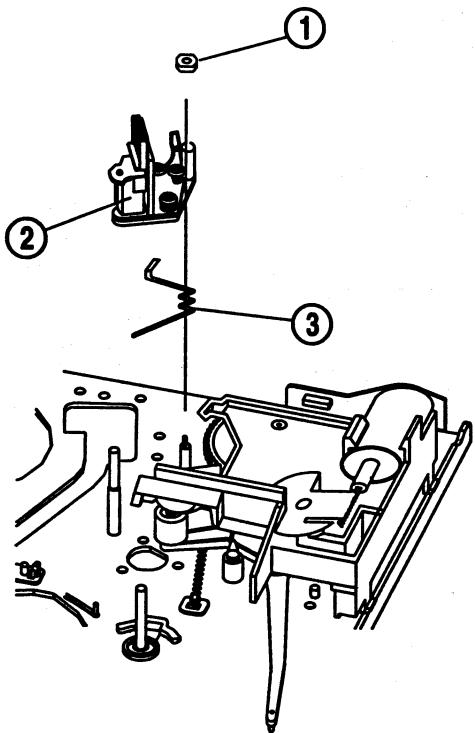


Fig. 21- A/C Head Assembly Removal

#### L/C Bracket Assembly removal (Fig. 22)

1. Remove one (1) screw ① from the L/C bracket assembly ② and remove the L/C bracket assembly ② from the deck mechanism (Fig. 22)

#### NOTE :

When reassembling, refer to Fig. 23 for alignment instructions.

#### Replacement of Pinch Lever Total Assembly Removal (Fig. 22)

1. Remove one (1) washer ③.
2. Unhook the pinch spring ④ from the main base ⑤ and remove the pinch lever total assembly ⑥.

#### NOTE :

Take care not to get oil on the outside surface of the pinch roller ⑩.

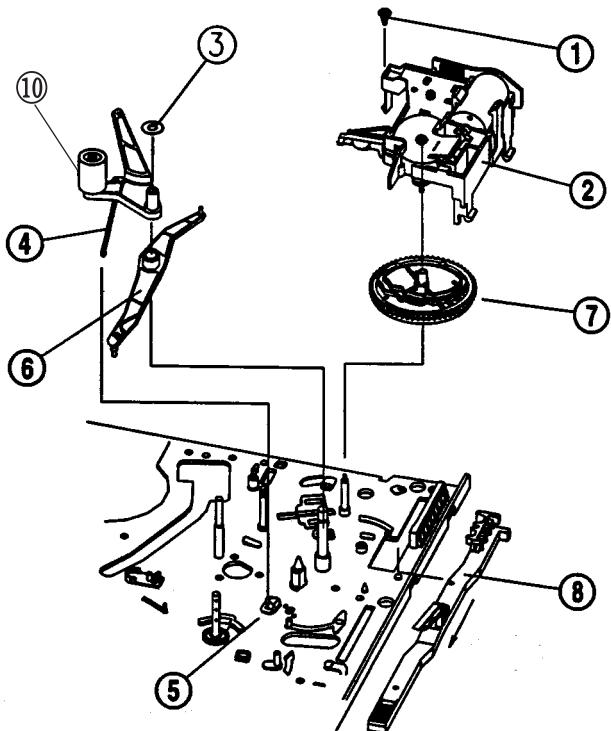


Fig. 22- Replacement of L/C Bracket Total Assembly/Pinch Lever Total Assembly/cam Gear/Relay Lever/F/L Rack

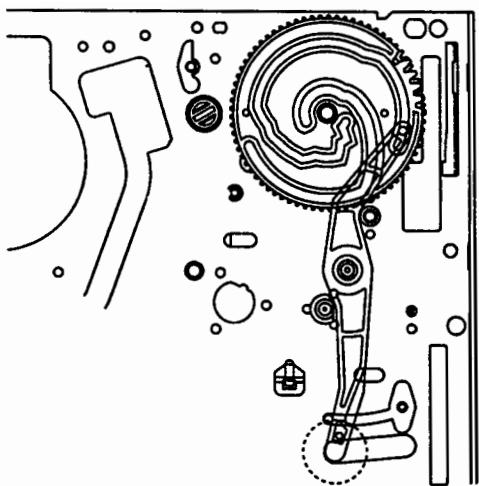


Fig. 23- L/C Bracket Assembly Alignment

#### Cam Gear, and F/L Rack Removal (fig. 22)

1. Remove the cam gear ⑦ form the deck mechanism.
2. Remove the relay lever ⑥ from the main base ⑤.
3. Remove the F/L rack ⑧ from the deck mechanism.

#### NOTE :

When reassembling, align the assembly as shown in Fig. 23 & 24.

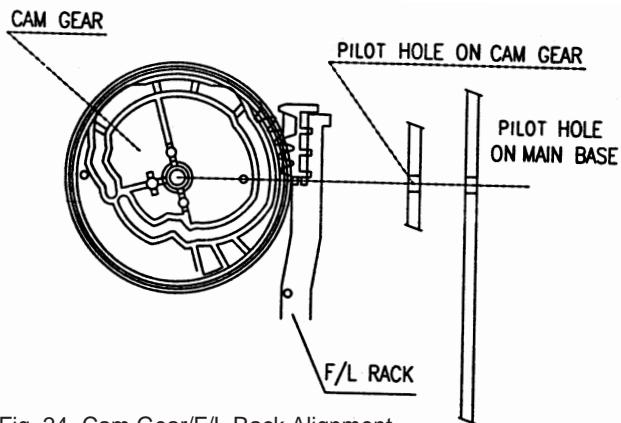


Fig. 24- Cam Gear/F/L Rack Alignment

#### S/T Main & Sub Brakes Removal (Fig. 25)

1. Unhook the main brake spring ① from the T main brake lever ③.
2. Disconnect the main brake lever assembly ② and T main brake lever ③ from the main base ⑧.
3. Unhook the s sub brake spring ④ from the main base and disconnect the s sub brake lever assembly ⑤ from the main base ⑧.
4. Unhook the T sub brake spring ⑥ from the main base and disconnect the T sub brake lever assembly ⑦ from the main base ⑧.

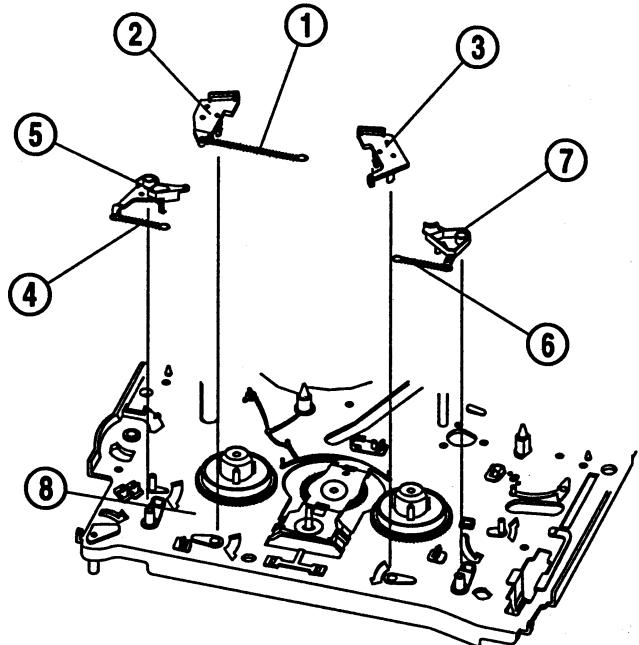


Fig. 25- Main Plate Removal

#### Tension Band Assembly Removal (Fig. 26, 27)

1. Remove the tension spring ② from the main base ① (Fig. 26)
2. Turn the deck mechanism upside down (fig. 27) is facing down (fig. 27)

#### NOTE :

- After reassembling, adjust the position of the tension pole as shown in fig. 28.
- Avoid getting grease or oil on the felt section of the band brake.

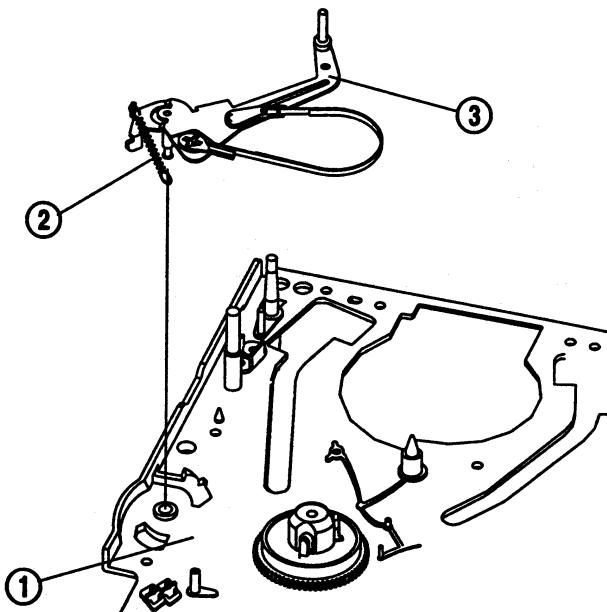


Fig. 26- Tension Band Assembly Removal (1)

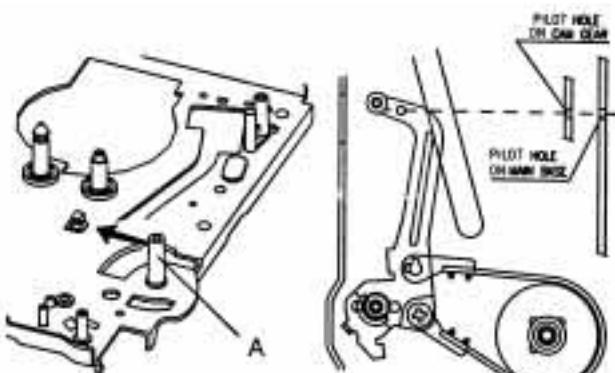


Fig. 27- Tension Band Assem-  
bly Removal (2)

Fig. 28- Tension Band Assem-  
bly Alignment With  
Main Base

#### Capstan Motor Removal (Fig. 29)

Remove three (3) screws and remove the capstan motor.

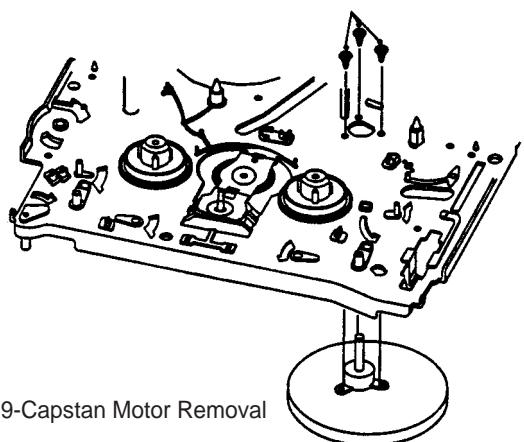


Fig. 29-Capstan Motor Removal

#### Idler Plate/Reel Table Removal (fig. 30)

1. Remove one ☐ polywasher ☐ from the idler plate ☐ and remove the idler plate ☐ from the main base.
2. Remove the reel tables ☐ and the two ☐ polysliders ☐ from the deck mechanism.

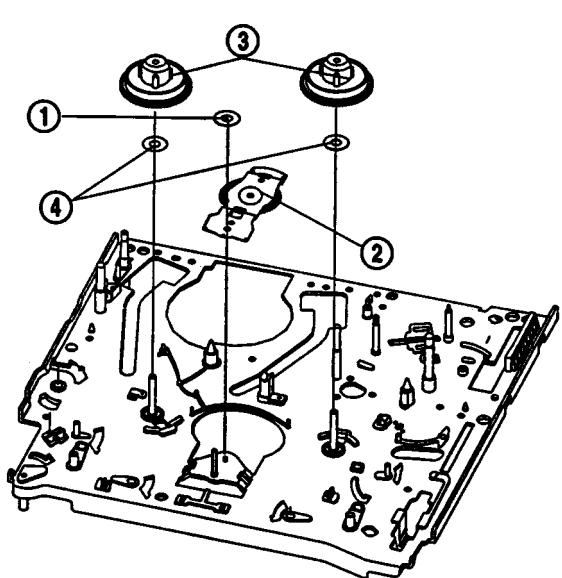


Fig. 30- Idler Plate/Reel Table Removal

#### FE Head Removal (fig. 31)

Remove one (1) screw (1) and lift the FE head (2) from the main base.

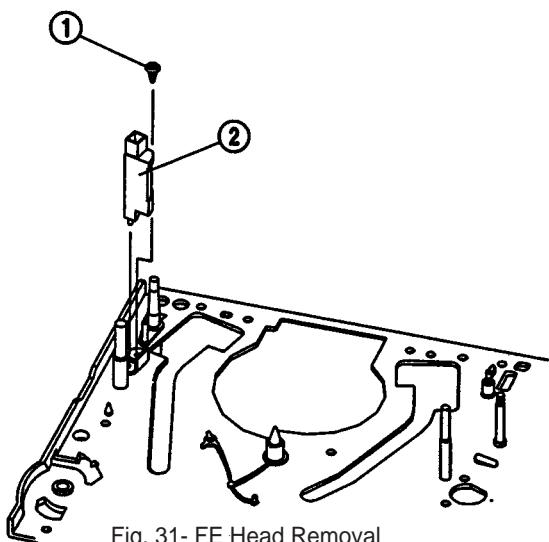


Fig. 31- FE Head Removal

#### Reel Gear Total Ass'y and Connect Plate Removal (fig. 32)

1. Turn the deck mechanism upside down and remove one ☐ polywasher ☐ .
2. Release the tab "B" of the main base and part the reel gear total ass'y ☐ from the main base.
3. Push the connect plate ☐ to the left direction and separate it from the main base.

#### NOTE :

- When removing the connect plate with the the F/L rack installed, take care not to damage/bend the connect plate.
- When assembling or disassembling, take care not to get oil or grease on the reel belt.

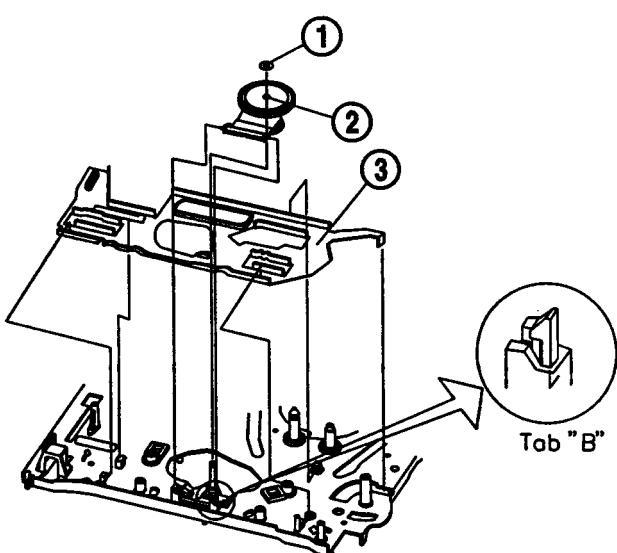


Fig. 32- Reel gear total ass'y and Connect Plate Removal

Some disassembly is required to access the adjustment locations. Refer to the "Disassembly Selection" in this publication for disassembly instructions.

**Caution :** Use an isolation transformer when servicing.

## 5. Mechanical Checks/Gear Alignment (fig. 1, 2, 3, 4, 5)

When mechanical problems occur or when reassembling parts in this mechanism, be sure to confirm the following instructions to confirm the following:

1. Make sure that the pilot hole on the cam gear "A" is aligned with the hole "B" in the main base in the EJECT mode (fig. 1)

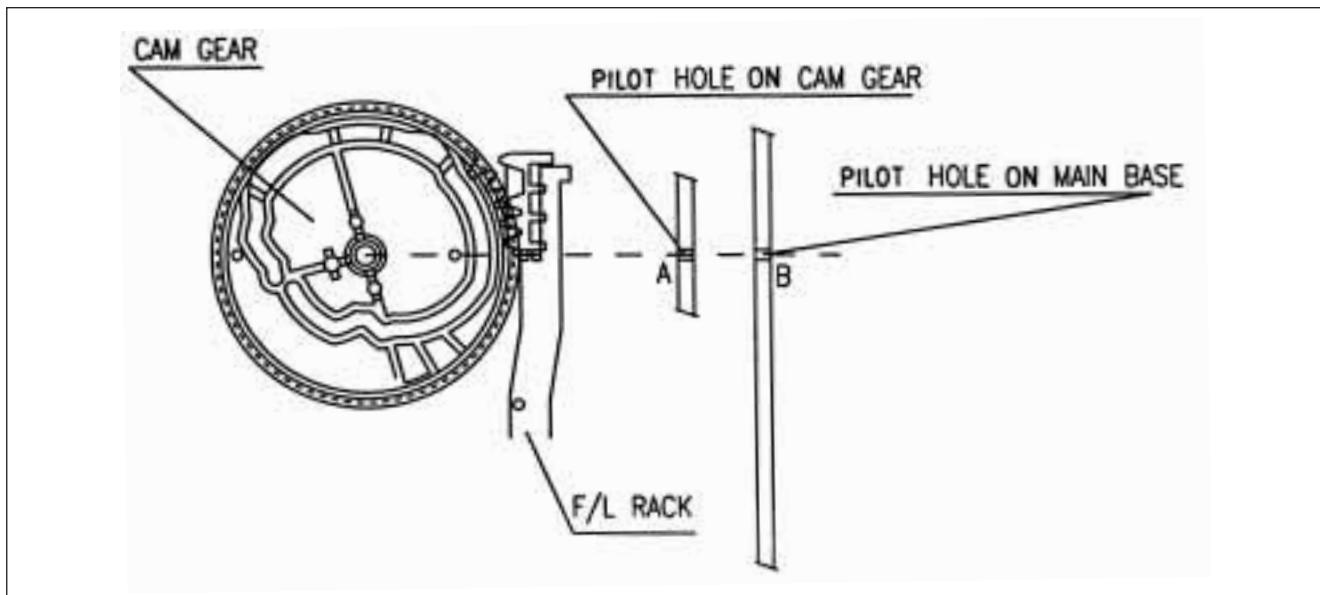


Fig. 1– Mechanical Checks/Cam Gear and F/L Alignment

2. Make sure that the part of the relay lever "A" which is assembled with CONNECT PLATE is fully rotated up to the left and of the hole "B" (Fig. 2)

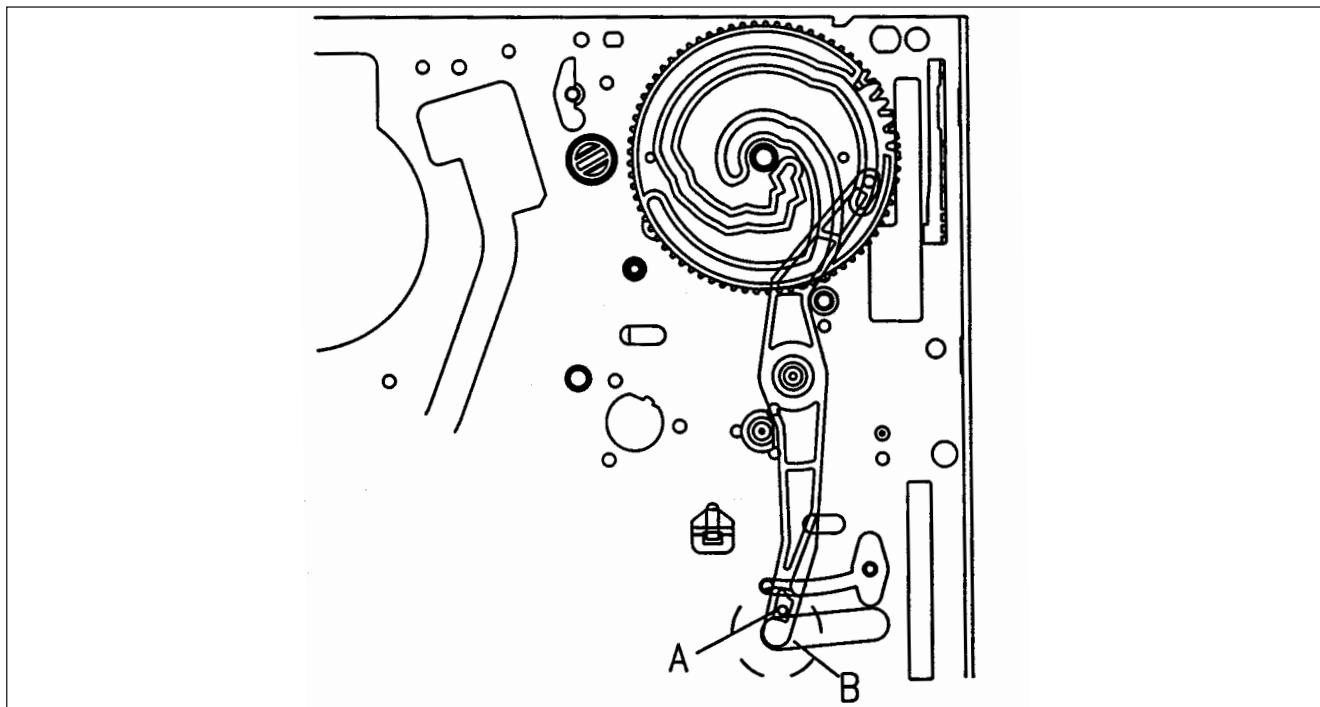


Fig. 2- Mechanical Checks/relay Lever and Cam Gear Alignment

3. There are two (2) triangular marks on the mode sense switch. When installing the L/C bracket assembly on the main base, confirm that the two (2) triangular marks align with each other in the EJECT mode (Fig. 3)

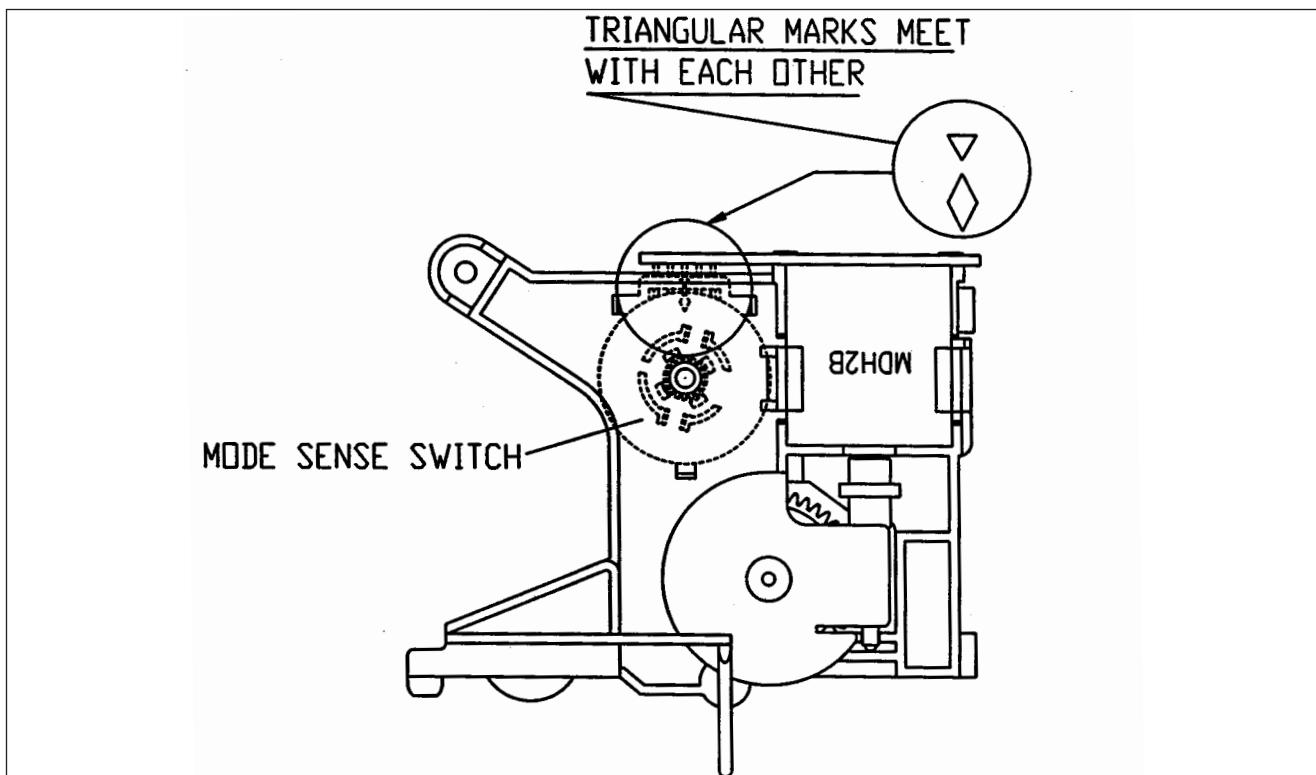


Fig. 3 - Mechanical checks/Mode Sense S/W Alignment

4. Make sure that the boss "A" of the Pinch Lever Total Ass'y is positioned at the point "B" of the cam gear in EJECT mode (fig. 4).

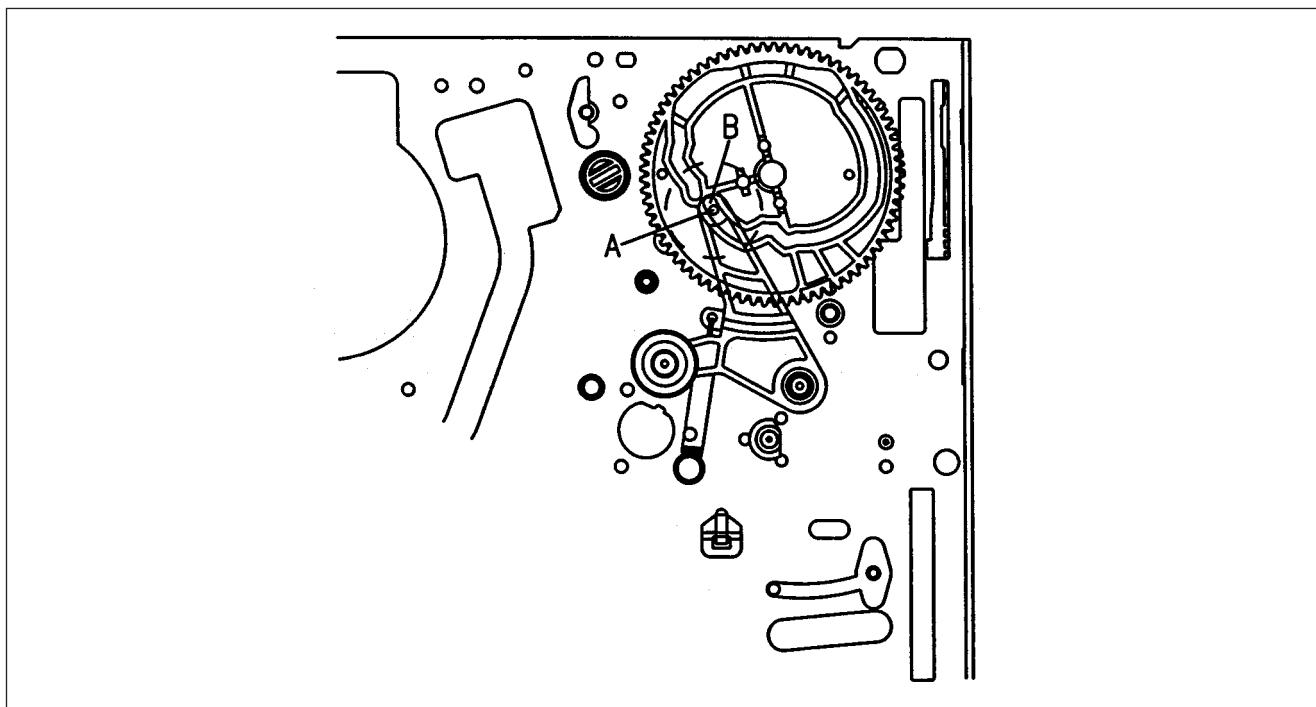


Fig. 4 – Mechanical Checks/Pinch Lever and Cam Gear Alignment

5. Confirm that the triangular mark "A" on the Loading Gear L Ass'y is aligned with the notch "B" in the Loading Gear R Ass'y in EJECT mode (Fig. 5)
6. Make sure that the teeth of the Loading Rack are aligned with those of the Loading Gear R so that hole "C" of the Loading Rack aligns with the circular mark "D" on the Loading Gear R (fig. 5)

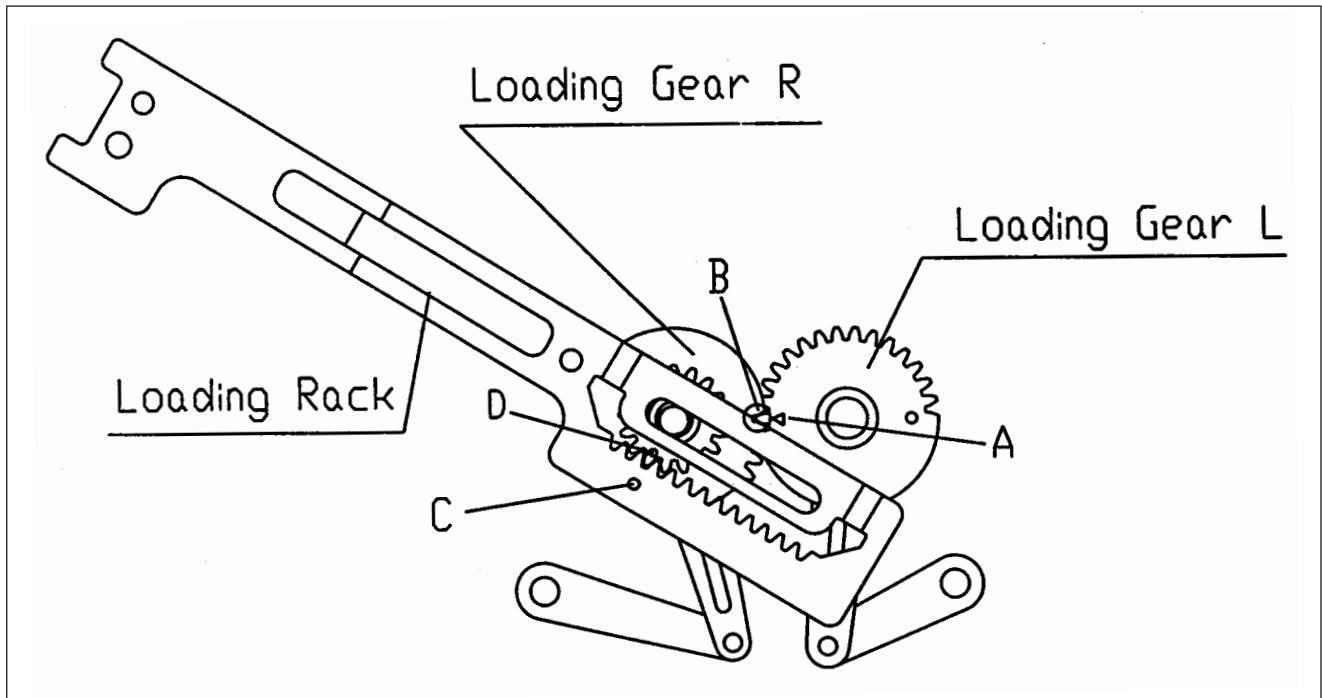


Fig. 5- Mechanical Checks/Loading Loading Rack and Loading Gear Alignment

## 6. Tension checks

### Back Tension Measurement /Adjustment (fig. 6, 7)

1. Confirm that the position of the tension pole is correctly positioned. If not, refer to the "Tension Pole Position Adjustment Procedures"
2. Play back a T-120 tape from the beginning for about 20 seconds (wait until tape transporting system becomes stable).
3. Insert the Tensiometer on the tape path (fig. 6) and measure the back tension. the measured result must meet the specification (25-33gr).
4. If the result is not within the specification, adjust the tension spring (If the measured result exceeds the specification, relocate the spring on the hook "A". If the value does not reach the specification, relocate the spring on the hook "B"). and repeat the step 1 thru 3 of "Tension Pole Position Adjustment" (fig. 7).

**NOTE :**

- Make sure that all of the three probes of the Tensiometer are in contact with the tape, but not with any other parts of the Deck mechanism.
- It is recommended that the measurement should repeated at least three times to guarantee an accurate reading.

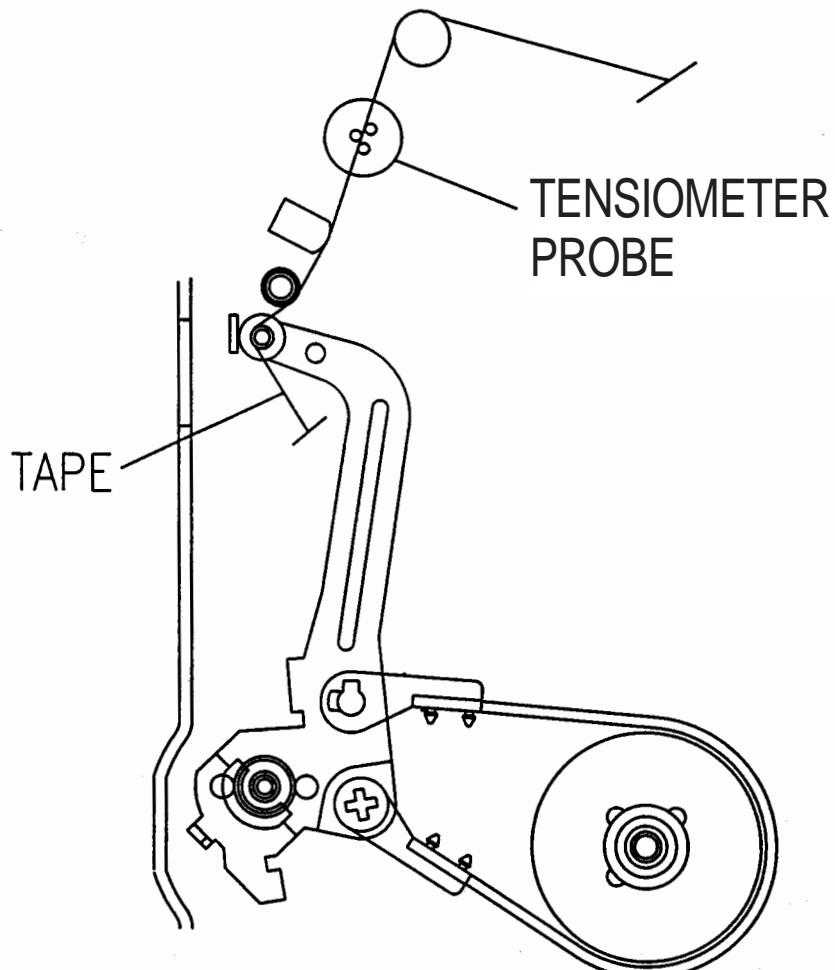


Fig. 6 - Back Tension Measurement/Adjustment

## Operating the VCR Without a Cassette Tape

1. Remove the cassette Loading Mechanism.
2. By hand revolve the worm gear counterclockwise 7-8 times until pole base loading process starts automatically.
3. Then PLAY mode appears. If you want ANOTHER mode, Press the desired button.
4. If the mechanism is in the desired mode, remove the Power(by unplugging cord).

## Tension Pole Position Adjustment

1. Make the mode PLAY without a cassette loaded. Refer to "Operating the VCR Without a Cassette Tape".
2. Confirm that the pilot hole on the tension lever coincides with that of the main base.
3. If the above confirmation is not satisfied, turn Band Brake Cap clockwise or counterclockwise until the two holes are coincide with each other.

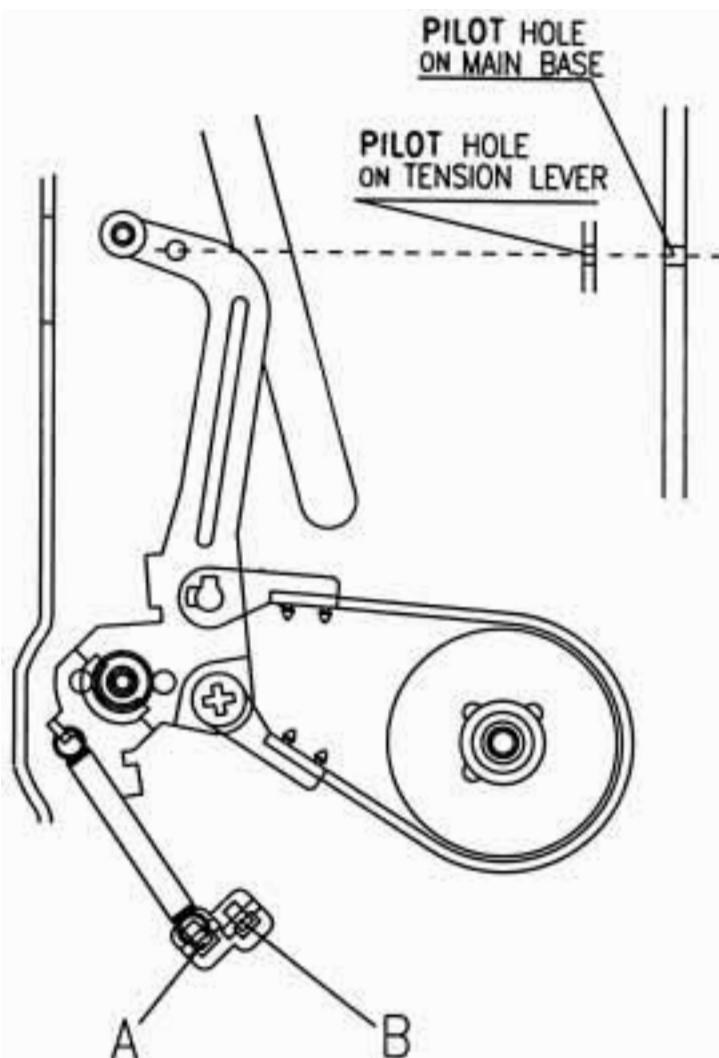


Fig. 7- Tension Pole Position Adjustment

# MECHANICAL ADJUSTMENTS

## Tape Path Alignment Procedures

The tape transporting system is precisely aligned at the factory and under the normal circumstances will not require adjustment. However, if noise appears in the playback picture, it can be considered that the tape damage has occurred or the tape path has changed, readjustment of the tape path is necessary.

## ADJUSTMENT FLOW FOR THE TAPE TRANSPORTING SYSTEM

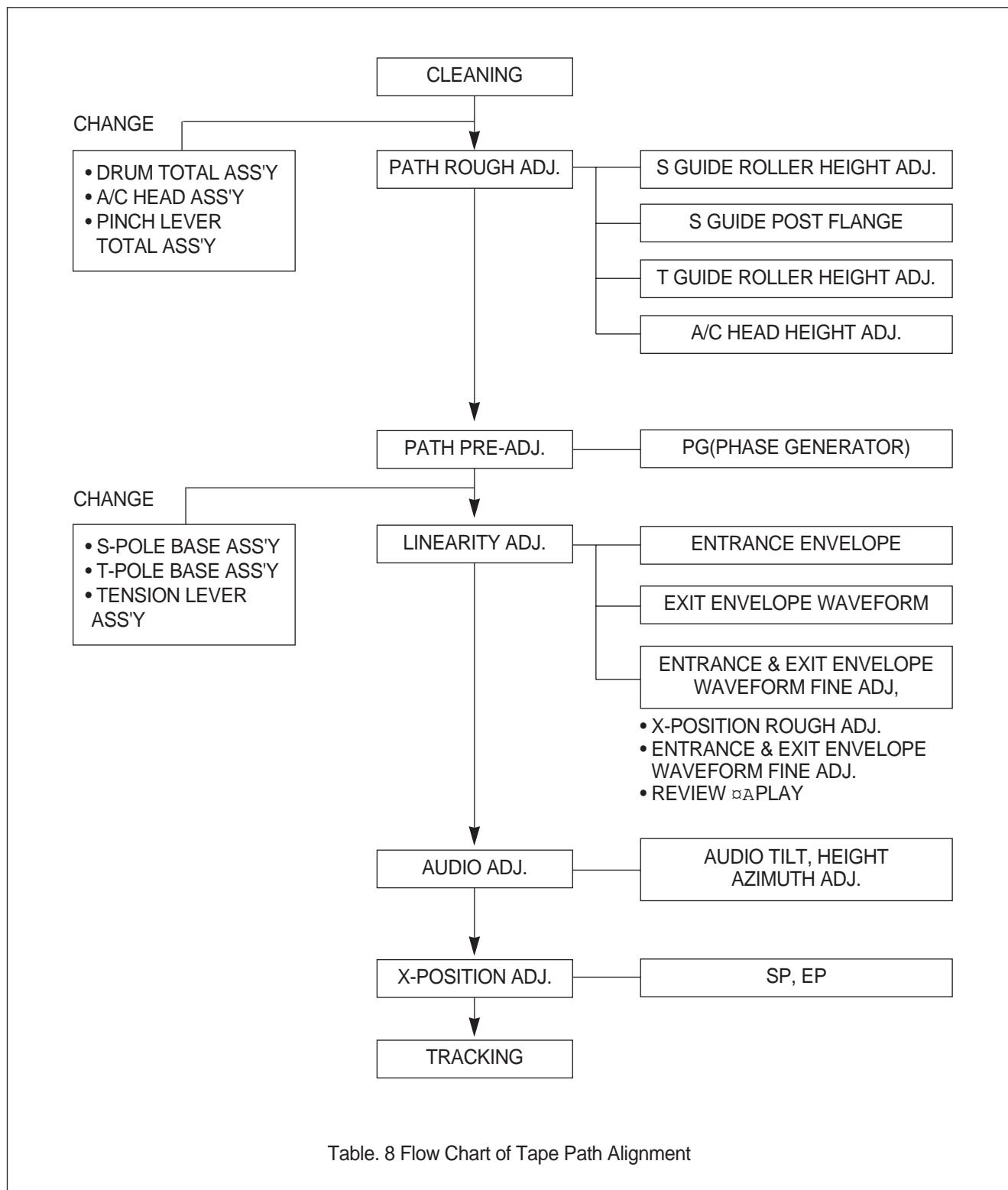
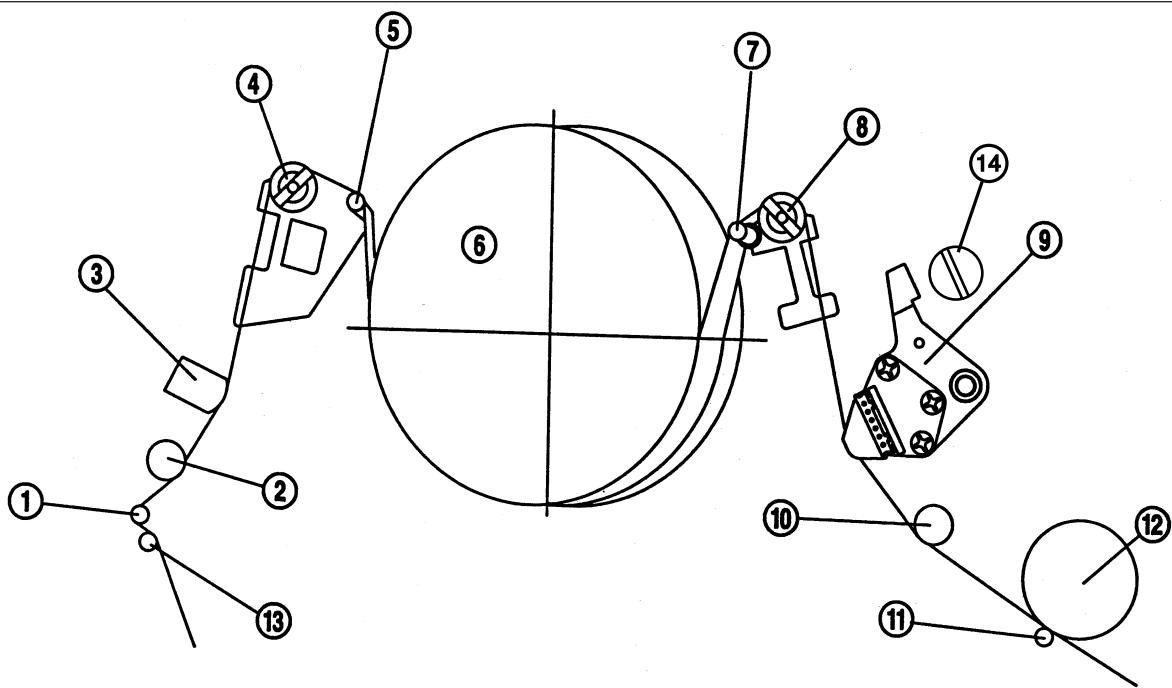


Table. 8 Flow Chart of Tape Path Alignment

---

## THE SCHEMATIC DIAGRAM OF TAPE TRANSPORTING SYSTEM



- |                           |                           |
|---------------------------|---------------------------|
| ① TENSION POLE            | ⑧ T-GUIDE ROLLER( $P_3$ ) |
| ② S-GUIDE POST            | ⑨ A/C HEAD                |
| ③ FE HEAD                 | ⑩ T-GUIDE POST            |
| ④ S-GUIDE ROLLER( $P_2$ ) | ⑪ CAPSTAN SHAFT           |
| ⑤ S-SLANT POLE            | ⑫ PINCH ROLLER            |
| ⑥ DRUM                    | ⑬ VERTICAL POST           |
| ⑦ T-SLANT POLE            | ⑭ CORN SCREW              |

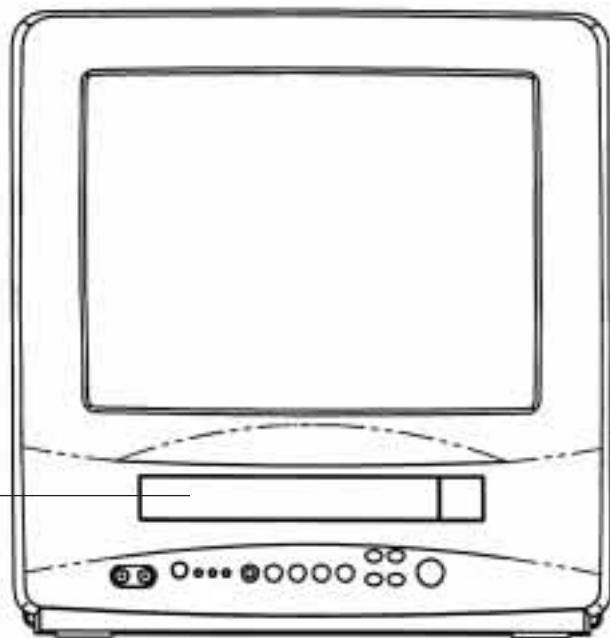
# DESCRIPTION

---

## 1. TVZ1321/TVZ1341/TVZ1341X

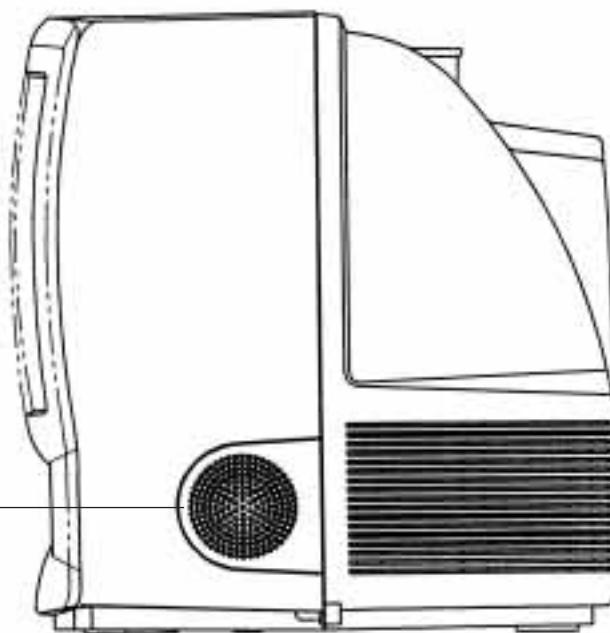
### 1-1. FRONT OF TV/VCR

FRONT DOOR



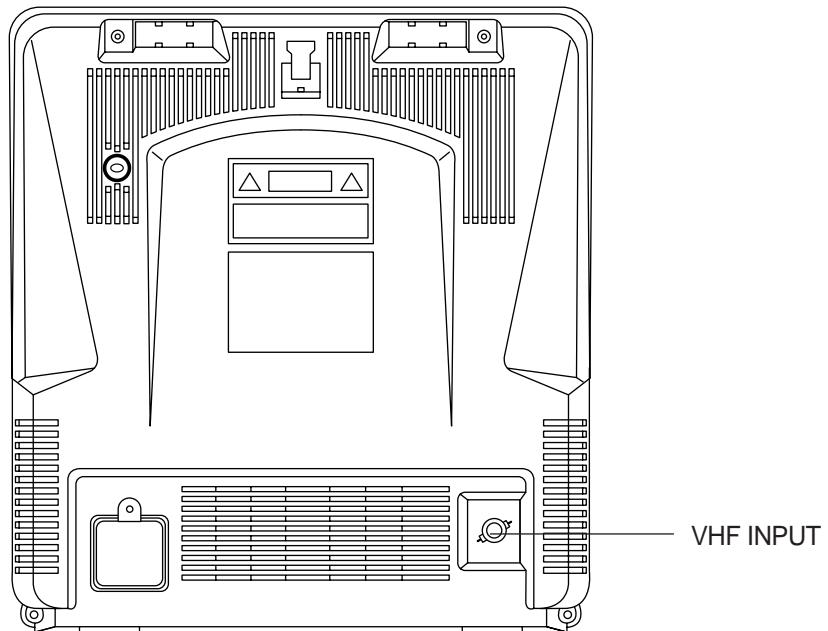
### 1-2. SIDE OF TV/VCR

SPEAKER



---

### 1-3. REAR OF TV/VCR



\*Rear of TV/VCR's

#### VHF Input

Connect VHF antenna to this terminal.

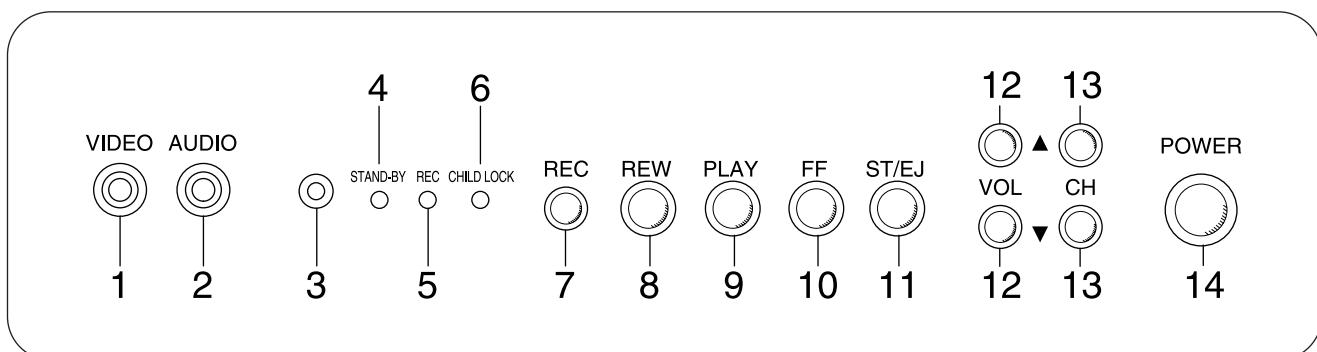
## 2. PANEL VIEW

### 2-1. FRONT PANEL

The section below summarizes the buttons, controls, and terminals that you will use with your TV.

#### Your TV/VCR's Front Panel

Below you will find short descriptions of the buttons and indicators on the front panel. These are used following functions.



##### 1 VIDEO IN jack

Use this jack to receive a video signal from another A/V component.

##### 2 AUDIO IN jack

Use this jack to receive an audio signal from another A/V component.

##### 3 Remote control receiver

This receiver receives a signal from your remote control. Do not block it.

##### 4 STAND-BY (red) indicator

This indicator lights up when the power is off.

##### 5 REC (Green) indicator

This indicator blinks when recording and lights up when set for timer recording.

##### 6. CHILD LOCK (Yellow) indicator

This indicator lights up when the child lock is set.

##### 7. REC button (record)

Press this button to begin recording. Press repeatedly to set a recording time using One-Touch Recording (OTR).

##### 8 REW button (rewind)

Use this button to rewind the tape.

##### 9 PLAY button

Press this button to begin normal playback of a tape.

##### 10 FF button (fast forward)

Use this button to "fast forward" a tape.

##### 11 ST/EJ button (stop/eject)

Press this button when a tape is moving to stop the tape. Press this button when the tape is stopped to eject it.

##### 12 ▲ VOL ▼ buttons (volume)

Use these buttons to change your TV/VCR's volume.

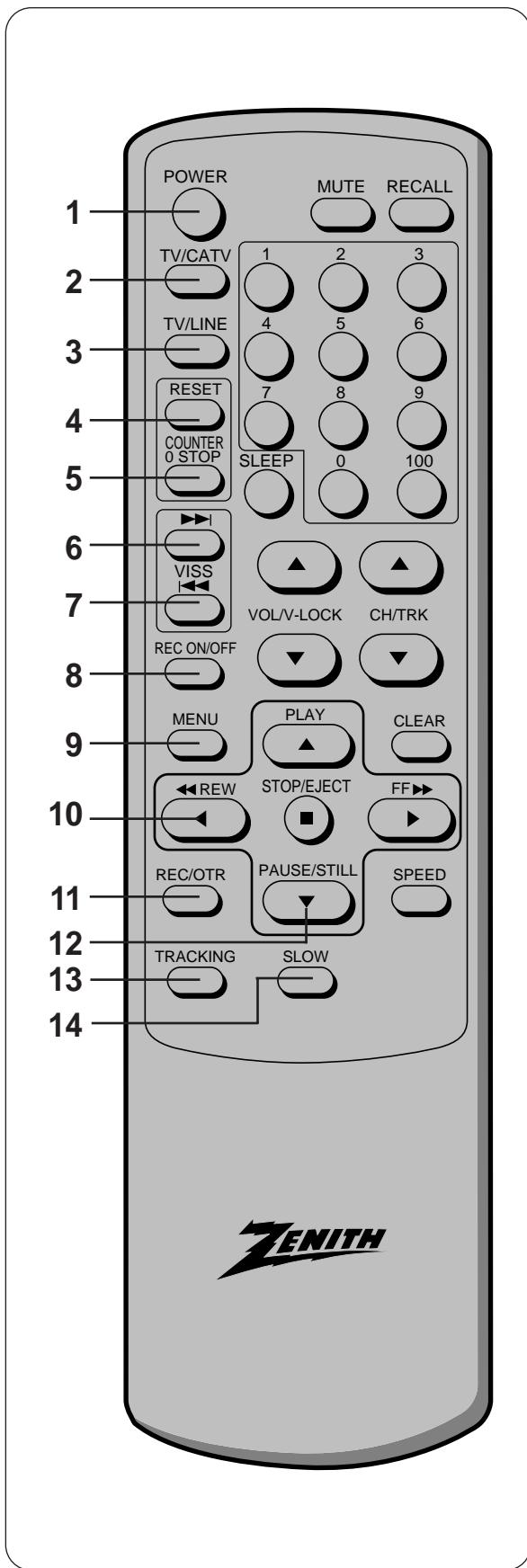
##### 13 ▲ CH ▼ buttons (channel)

Use these buttons to change channels on your TV/VCR. You will also use these buttons to adjust the tracking.

##### 14 Power button

Use this button to turn your TV on or off.

### 3. Remote control



#### 1 POWER

Use this button to turn your TV/VCR on or off.

#### 2 TV/CATV

Use the button to set up your TV/VCR to receive signals from an antenna (TV) or a cable system (CATV).

#### 3 TV/LINE

Use this button to select between viewing the signal coming from the antenna terminal (TV) or the signal coming from the A/V jacks (LINE).

#### 4 RESET

Press this button to reset the counter to 0:00:00.

#### 5 O STOP

Press this button to automatically rewind the tape to the 0:00:00 point.

#### 6 VISS ►►

Press this button to find the next index mark on a tape and begin playing.

#### 7 VISS ◀◀

Press this button to find the most recent index mark on a tape and begin playing.

#### 8 REC ON/OFF

Use this bulletin to enable or disable timer recording.

#### 9 MENU

Press this button to turn the on-screen menu system on and off.

#### 10 REW (rewind)

Use this button to rewind the tape or to change items in the menu system.

#### 11 REC/OTR

Press this button to begin recording.

Press repeatedly to set a recording time using One-Touch Recording (OTR).

#### 12 PAUSE/STILL

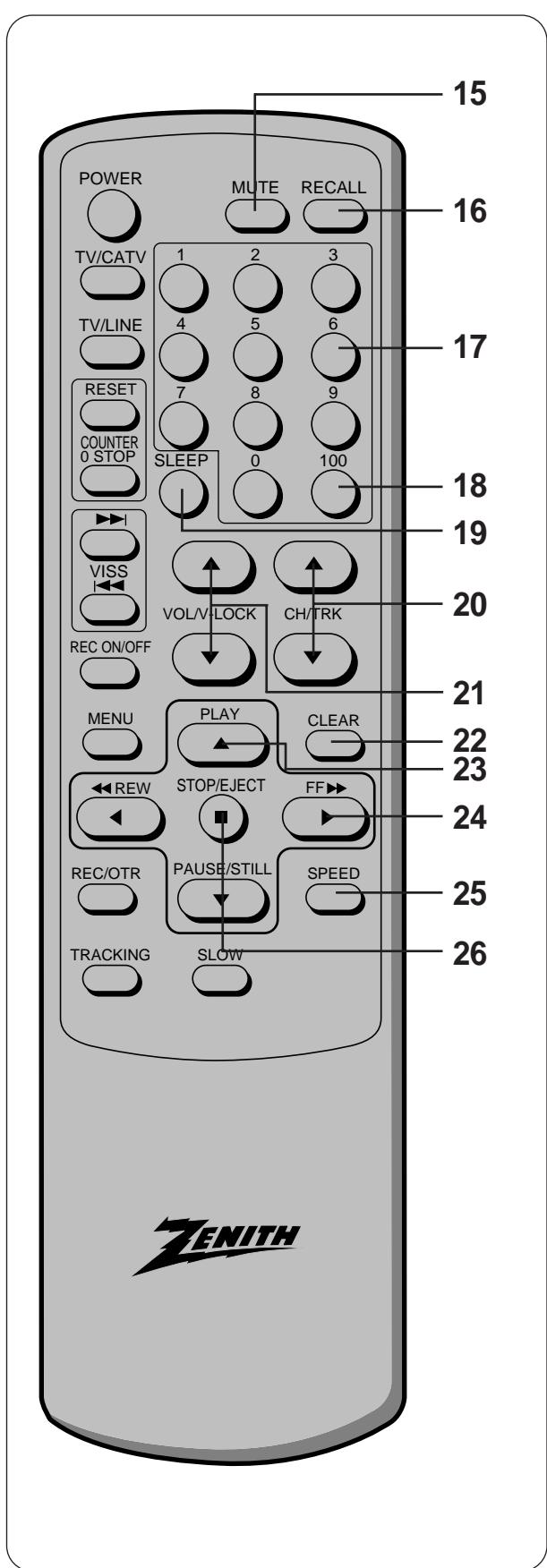
Press to temporarily stop the tape during recording or playback, or to move the cursor in the menu system.

#### 13 ATK (Auto Tracking)

Press this button to Automatically set tracking point.

#### 14 SLOW

Use this button to enable slow playback.



**15 MUTE**

Use to turn the TV/VCR's sound on and off.

**16 RECALL**

Press this button to display the current time, the counter, channel number or other status items.

**17 Number buttons (0-9)**

Use these buttons to change channels or select menu items.

**18 100**

Use this button if you wish to view a channel greater than 99.

**19 SLEEP**

Use this button to program the TV/VCR to turn off after a certain time.

**20 CH/TRACKING**

Use these buttons to change channels on your TV or to adjust the tracking of a video tape during playback.

**21 VOL/V-LOCK**

Press to adjust the volume of the TV/VCR. You can also use these button to eliminate video noise when displaying a still frame.

**22 CLEAR**

Press this button to erase timer recording settings.

**23 PLAY**

Press this button to begin normal playback of a tape, or to move the cursor in the menu system.

**24 FF (fast forward)**

Use this button to "fast-forward" a tape or to change items in the menu system.

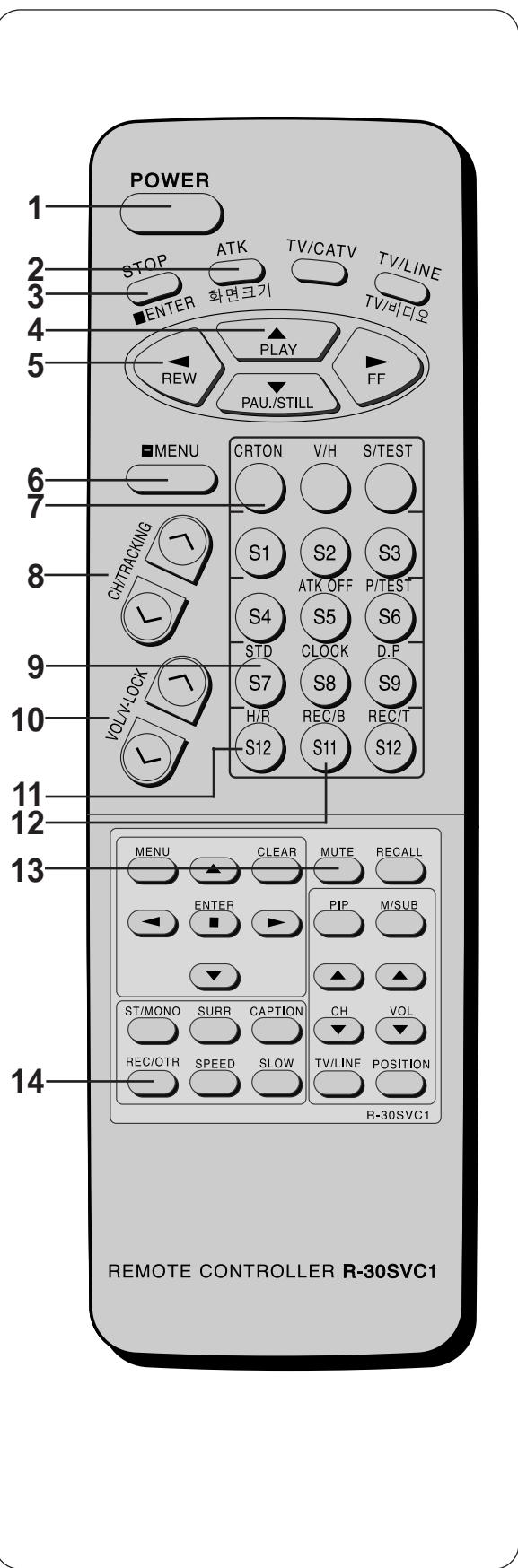
**25 SPEED**

Use this button to select the SP, LP, or SLP tape speed.

**26 STOP/EJECT**

Press this button when a tape is moving to stop the tape ; press it when the tape is stopped to eject it. Also use this button to activate items in the menu system.

## 4. Remote controller (Service)



### 1 POWER

Use this button to turn your TV/VCR on or off.

### 2 ATK (Auto tracking)

If the screen has noise and abnormal when playback mode, Press this button to get fine playback Quality.

### 3 STOP (ENTER)

Press this button when a tape is moving to stop the tape; press it when the tape is stopped to eject it. Also use this button to activate items in the menu system.

### 4 PLAY

Press this button to begin normal playback of a tape, or to move the cursor in the menu system.

### 5 REW (Rewind)

Use this button to rewind the tape or to change items in the menu system.

### 6 MENU

Press this button to turn on the screen menu system on and off.

### 7 CRT ON

Not used.

### 8 CH/TRACKING

Use this button to change channels on your TV or to adjust the tracking of a video tape during playback.

### 9 STD

If you press this button, The TV/VCR become to manufacturer's Mode.

### 10 VOL/V-LOCK

Press to adjust the volume of the TV/VCR.  
You can also use these button to eliminate video noise when displaying a still frame.

### 11 H/R

Press this button to set Heat-Run mode.

### 12 REC/B (Record Bias)

Use this button to adjust Record-Bias.

If you press this button,

The TV/VCR operates in Record-Mode in spite of having no tape.

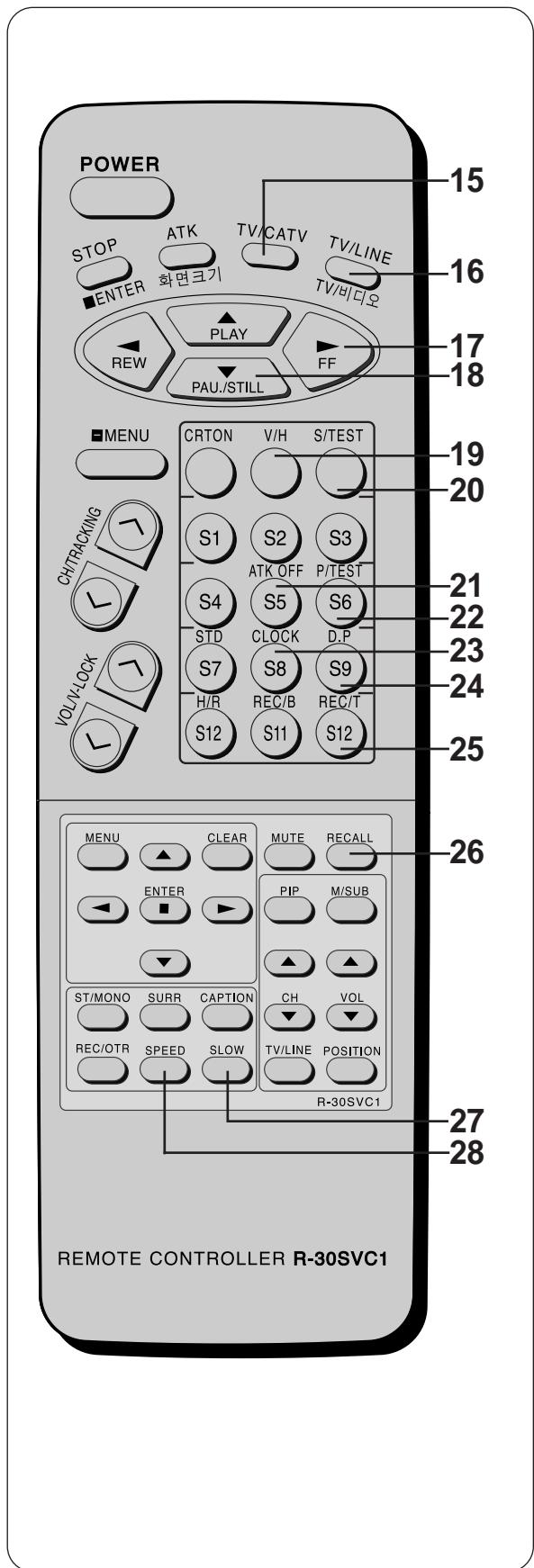
### 13 Mute

Use to turn the TV/VCR's sound on and off.

### 14 REC/OTR

Press this button to begin recording.

Press repeatedly to set a recording time using One-Touch Recording(OTR).



### 15 TV/CATV

Use this button to set up your TV/VCR to receive signals from an antenna(TV) or a cable system(CATV).

### 16 TV/LINE

Use this button to select between viewing the signal coming from an antenna terminal(TV) or the signal coming from the A/V Jacks(LINE).

### 17 FF (Fast Forward)

Use this button to "Fast Forward" a tape or to change items in the menu system.

### 18 PAU./STILL

Press to temporarily stop the tape during recording or playback, or to move the cursor in the menu system.

### 19 V/H

This is a one of the adjustment mode.  
When press this button, only horizontal line is showed up the screen.

### 20 S/TEST

Not used.

### 21 ATK OFF (Autotracking OFF)

Press this button to adjust x-path Adjustment and to confirm fine tracking.

Front Panel's leds are lighted up if you press this button.  
Use only adjustment tape.(DN-1:color bar)  
After adjustment, Press this button repeatedly until leds are off. and Press stop button twice.  
After then, Insert tape and confirm fine tracking operation.

### 22 P/TEST (Picture Test)

Use this button to confirm screen's condition.  
(contrast, bright, tint, color, sharpness)

### 23 CLOCK

Use this button to test time operation. If you press this button, the time go( ×60)faster than normal mode.

### 24 D.P (Digital Preset)

Use this button to adjust screen menu.  
(contrast, bright, tint, color, sharpness)

### 25 REC/T (Record Test)

Use this button to confirm self record-playback.

\* Operation  
{Recording(SP:5sec, SLP:5sec)→Zero stop(REW)}

### 26 RECALL

Press this button to display the current time, the counter, channel number or other status items.

### 27 SLOW (only 4HD)

Press this button to begin slow playback.

### 28 SPEED (only 4HD)

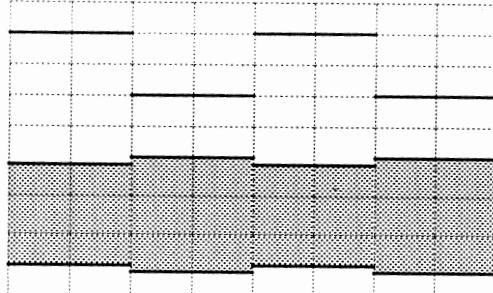
Press this button to change slow playback speed.

# ELECTRICAL ADJUSTMENTS

## 1. SERVO

### 1-1) X-path and P<sub>2</sub>, P<sub>3</sub> Adjustment

Item	Mode	Adjustment parts	Check point	Test equipment	Test tape	Input signal
X-path P <sub>2</sub> , P <sub>3</sub>	PLAY	CONE SCREW P <sub>2</sub> , P <sub>3</sub>	PY09 PY05	Oscilloscope	COLOR BAR	

Location of Adjustment Parts		Observation Waveform
MAIN PCB		Horizontal Axis : S/DIV Vertical Axis : CH1 : H/SW, CH2 : ENVELOPE
CH1	CH2	

### Adjustment Procedure

#### 1. Preparation

- 1) Set the AUTO TRACKING to OFF using the Service REMOCON.
- 2) Play back the Test tape (DN-1:Color Bar)
- 3) Set the oscilloscope to the CHOP mode. Connect CH1 to the H/W (PY09) and CH2 to the ENVELOPE (PY09) and trigger the scope with the signal from CH1.

#### 2. Adjustments

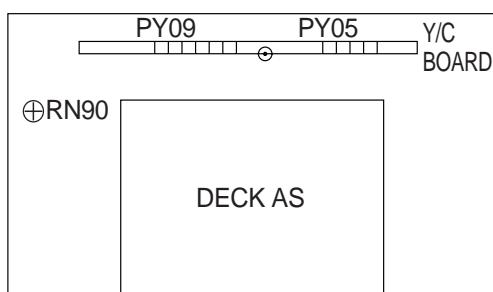
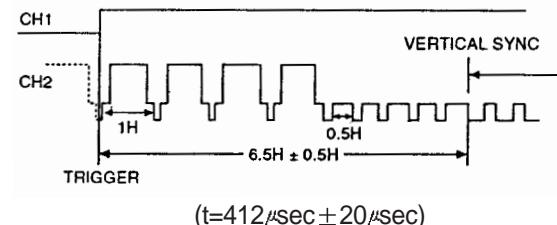
- 1) Adjust CONE SCREW to position to maximize the height of the ENVELOPE waveform.
- 2) Adjust P<sub>2</sub> to position where the edge of ENVELOPE waveform are equal and symmetrical. Adjusting P<sub>3</sub> is same to P<sub>2</sub>'s.

#### 3. Remarks

- 1) After adjusting, Press this button twice. (so leds are off.)
- 2) Insert the tape into deck to confirm Autotracking.
- 3) If the picture appears soon after the tape has been threaded around the drum, adjustments are probably correct.  
However if autotracking is repeatedly operating, the adjustments are incorrect.
- 4) Refer to the illustration on page 23 for the location of p<sub>2</sub>, p<sub>3</sub> and the cone screw.

## 1-2) PLAYBACK PHASE Adjustment

Mode	Adjustment parts	Check point	Test equipment	Test tape	Input signal
Play	RN90	PY05	Oscilloscope	COLOR BAR	

Location of Adjustment Parts	Observation Waveform
MAIN PCB  	Horizontal Axis : 50μS/DIV Vertical Axis : CH1 : SW30, CH2:V.OUT  

### • Adjustment Procedure

#### 1. Preparation

- 1) Play the Test tape (Color Bar).
- 2) Connect scope probe to PY 09
- 3) Set the Oscilloscope to the chop mode.  
Connect CH1 to the H/SW(PY09) and CH2 to the V-OUT(PY09) and trigger the scope with the signal from CH1.

#### 2. Adjustment

- 1) Adjust RN90 to position the falling edge of SW PULSE at 6.5H from the V-SYNC.

## 2. AUDIO

### 2-1) AUDIO CIRCUIT ADJUSTMENT METHOD

Item	Mode	Adjustment parts	Check point	Test equipment	Test tape	Input signal
Audio Record Bias	REC	RU57	RC HEAD 10Ω	Audio level meter	Blank tape	NONE

Location of Adjustment Parts	Observation Waveform
<p>MAIN PCB</p> <p>MAIN PCB PARTS SIDE</p>	<p>Horizontal Axis : Vertical Axis :</p>

#### • Adjustment Procedure

##### 1. Preparation

- 1) Select REC mode using Service REMOCON. (then, front panel REC LED will be on.)
- 2) No signal is applied..
- 3) Connect the Audio level meter to RC HEAD 10Ω (on solder side).

##### 2. Adjustment

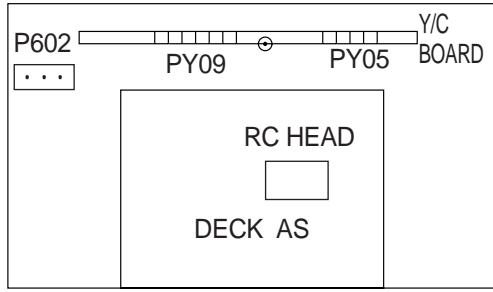
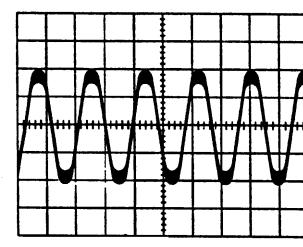
- 1) Adjust RU57 to obtain [3.0]mVrms.

##### 3. Adjustment Inspection Standard : $[3.0 \pm 0.1]mVrms$

- If you don't have Service Remocon, You can select rec mode by inserting a tape (with record tab removed) and pushing the rec button.

## 2-2) Audio Azimuth Adjustment

Item	Mode	Adjustment parts	Check point	Test equipment	Test tape	Input signal
Audio Azimuth Adjustment	PLAY	AC HEAD SCREW	P602 Oscilloscope	Signal GEN. Oscilloscope	MONO Bar	7KHz

Location of Adjustment Parts	Observation Waveform
<p>MAIN PCB</p>  <p>MAIN PCB PARTS SIDE</p>	<p>Horizontal Axis : 0.1mS/DIV Vertical Axis : 0.1V/DIV</p> 

### • Adjustment Procedure

#### 1. Preparation

- 1) Set the VCR to the PLAY mode
- 2) Connect scope to P602.
- 3) Adjust first screw on the plate under the AC head to maximize scope's signal height.

#### 2. Adjustment Inspection standard : [Maximum Point]

### 3. VIDEO

#### 3-1) Y NOISE REDUCTION

Mode	Adjustment parts	Check point	Test equipment	Test tape	Input signal
EE	RY 34	PY05, PY09	Oscilloscope Signal gen.		Multi Burst with 3.58 MHz

Location of Adjustment Parts	Observation Waveform
<p>Y/C PCB</p> <p>Y/C PCB SOLDER SIDE</p>	<p>Horizontal Axis : 10μS/DIV Vertical Axis : 20 mV/DIV</p> <p>CH-2 (PY05YNR)</p> <p>Horizontal:10μs/DIV Vertical:20mv/DIV</p>

#### • Adjustment Procedure

##### 1. Preparation

- Supply the MULTI BURST signal to the VIDEO IN JACK.

##### 2. Adjustment

- Set the VCR to the STOP(EE) MODE.
- Set the Oscilloscope to the chop mode.

Connect CH1 to the V-OUT(PY09) and CH2 to the CNR TP(PY05) and trigger the scope with the signal from CH1.

- Adjust RY34 to minimize the 3.58MHz Y component of the MULTI BURST signal becomes less than [20]mVp-p.

### 3-2) COLOR NOISE REDUCTION

Mode	Adjustment parts	Check point	Test equipment	Test tape	Input signal
EE	RY 91	PY09	Signal gen. Oscilloscope		Color Bar

Location of Adjustment Parts	Observation Waveform
<p>Y/C PCB</p> <p>Y/C PCB SOLDER SIDE</p>	<p>Horizontal Axis : 10μS/DIV Vertical Axis : 50 mV/DIV</p> <p>CH-2(PY09(NR))</p> <p>Horizontal:10μs/DIV Vertical:50mv/DIV</p>

#### • Adjustment Procedure

##### 1. Preparation

- 1) Supply the Color bar signal to the VIDEO LINE IN JACK.
- 2) Supply 5V to PY05.

##### 2. Adjustment

- 1) Set the VCR to the STOP(EE) Mode.
- 2) Set the Oscilloscope to the chop mode.

Connect CH1 to the V-OUT(RY09) and CH2 to the YNR TP (PY05) and trigger the scope with the signal from CH1.

- 3) Adjust RY91 until Color signal becomes minimum.

# ■ SIGNAL FLOW

---

## 1. VIDEO & AUDIO

### 1-1. FROM RF TO COMPOSITE VIDEO

1-1. To select a channel the tuner must receive CLOCK, DATA and ENABLE from the TIMER IC (I701). Then the tuner(U101) selects a channel frequency by means of PLL circuit operation and outputs a IF signal(Intermediate Frequency).

The signal from the tuner IF output is amplified by Q103, pre-amp. and then passes through the SAW filter. Now the IF signal is input to pins 8 and 9 of I501, where it is optimized by the VCO and AFT circuits.

The composite video output at pin 51 of I501, contains the 4.5MHZ audio component. However the composite video signal at pin 45 of I501, does not contain the 4.5MHZ audio signal. Trap Z102 removes the audio signal. Pin 48 of I501, contains only the 4.5MHZ audio signal which is filtered by Z103.

Pin 1 of switching IC 503 receives it, s signal directly from pin 43 of I501. The signal at this point is selected by an internal switch in I501. The signal source is either TV video at pin 45 or from pin 42 of I501. There are three video signals, tuner, external, A/V and PB. video.

Switching IC 503 controls these signals.

### 1-2. COMPOSITE VIDEO SIGNAL

This CHASSIS includes three video signals. One is from RF(above mentioned), another is from A/V, and the third is from PLAY MODE.

Switching IC I503 controls these three final video signal.

Once one of the two signals(TV video signal from pin 45 of I501 and A/V video signal from pin 42 of I501) is selected, the selected signal is from pin 43 of I501 and it is input to pin 1 of I503.

Another video signal from PLAY MODE is input to pin 4 of I503.

Also, One of the two signals(video signal from pin 1 of I503 and video signal from PLAY MODE) is selected, and the selected signal is transmitted to pin 2 and pin 3 of I503.

Final video signal is input to pin 22 of I701 to detect the CAPTION SIGNAL and it is also input to pin 38(C INPUT), pin (Y INPUT), pin 44(SYNC INPUT).

And R-Y signal is from pin 23, G-Y signal is from pin 24, B-Y signal is from pin 22, -Y signal is from pin 22, and those color difference signals are sent to CRT BOARD.

In CRT BOARD, those color difference signals are mixed and amplified by color difference drive method.

### 1-3. AUDIO SIGNAL

This CHASSIS includes three audio signals. One is from RF(above mentioned), another is from A/V, and the third is from PLAY MODE.

Switching IC I503 also controls these three audio signals.

TV Audio signal from pin 3 of I501 is input to pin 8 of I503.

A/V audio signal from A/V JACK is input to pin 11 of I503 and outputted to pin 9, pin 10.

So, that audio signal is input to pin 16 of IU01.

Audio signal from PLAY MODE is input to pin 2 of IU01.

One of the two audio signals(audio signal from PLAY MODE, audio signal from A/V mode) is selected and output to pin 22 of IU01 and input to pin 1 of I501.

Audio signal to be input pin 1 of I501 and controlled volume is output to pin 4 of I501.

That audio signal is input to pin 3 of I601(SOUND AMP), and amplified by I601 and output to pin 5 of I601.

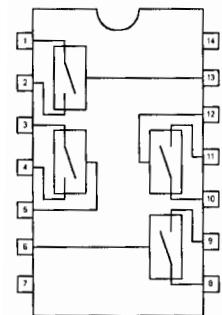
Finally the audio signal goes to the SPEAKER.

---

## SWITCHING TABLE OF I503

PIN \ MODE	RF (EE)	A/V	PLAY	TOGGLE
5	L	L	H	VIDEO
6	H	L	L	AUDIO
12	L	H	H	AUDIO
13	H	H	L	VIDEO

\* The input signal is routed to the output port when the switching port is at logic high state.



(Top View)

## 2. Power circuit (Power supply circuit)

### 2-1. Abstract and Pin Function

The SMPS(Switch Mode Power Supply) can supply a stable output voltage to each circuit, provided that the input voltage is within the range of between 108-132 VAC at 60HZ.

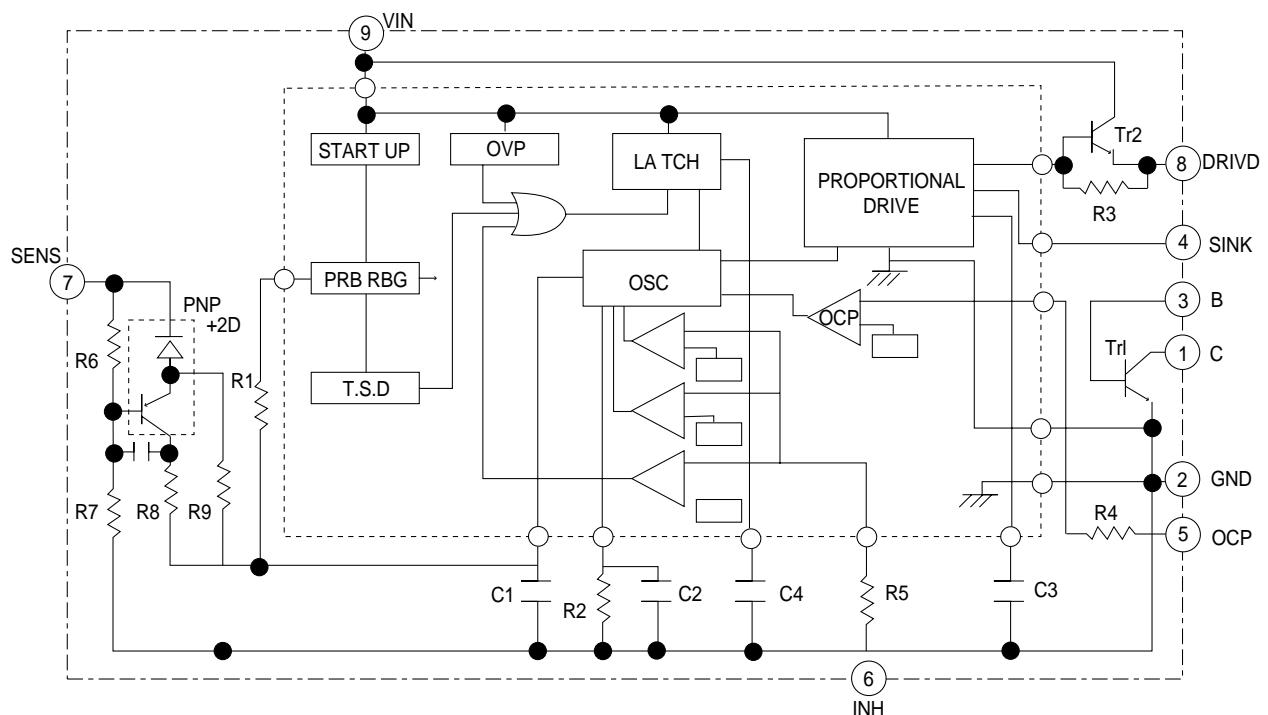
Regulation is accomplished by PWM(Pulse Width Modulation) of IC STR-S5707.

The table below identifies the various output voltages:

NO.	SUPPLY ELECTRIC RESOURCES	SOURCE	SUPPLY CIRCUIT	APPLICATION
1	DC 125V	TRANS SECOND RECTIFIED VOLTAGE D814	FBT PIF	FBT B+ For channel selecting(33V)
2	DC 12V (MOTOR 12V)	REGULATOR IC I805(PQ12RF11)	SERVO circuit	For driving DRUM, CAPSTAN MOTOR
3	DC 12V (ON/OFF 12V)	REGULATOR IC I804(PQ12RF11)	TUNER IF AMP circuit AUDIO circuit VIDEO circuit	For channel selecting(9V, 5V) IF amp. circuit(9V), V/SIF(5V) For driving AUDIO I/O circuit For driving VIDEO, ANALOG circuit
4	DC 6.0V (EVER 5.3V)	REGULATOR IC I803(KIA7806)	SERVO, TIMER IC SYSCON IC circuit	For driving SYSCON, TIMER, SERVO circuit
5	DC 14V	TRANS SECOND RECTIFIED VOLTAGE D813	AUDIO circuit	AUDIO AMP. B+
6	DC 9V	REGULATOR IC I806 (KIA7809)	DEFLECTION circuit	VERTICAL IC B+ H. VCC

### 2-2. I801 STRS-5707

#### 1) BLOCK DIAGRAM



## 2) Function of Each Terminal

No. of Terminal	Symbol	Description	Function
1	C	Collector Terminal	Collector of TRr(Power Transistor)
2	GND	Ground Terminal	Ground(Emitter of PTr)
3	B	Base Terminal	Base of PTr
4	SINK	Sink Terminal	Base Current (IS) Input
5	OCP	Overcurrent Protection Terminal	Overcurrent Sensing Signal Input
6	INH	Inhibit Terminal	Off Time Synchronizing
		Latch Terminal	Latch Circuit Operation Signal Input
7	SENS	Sensing Terminal	Constant Voltage Control Signal Input
8	DRIVE	Drive Terminal	Base Drive Current(ID) Output
9	VIN	VIN Terminal	Control Circuit Power Supply Input

## 3) Other Function

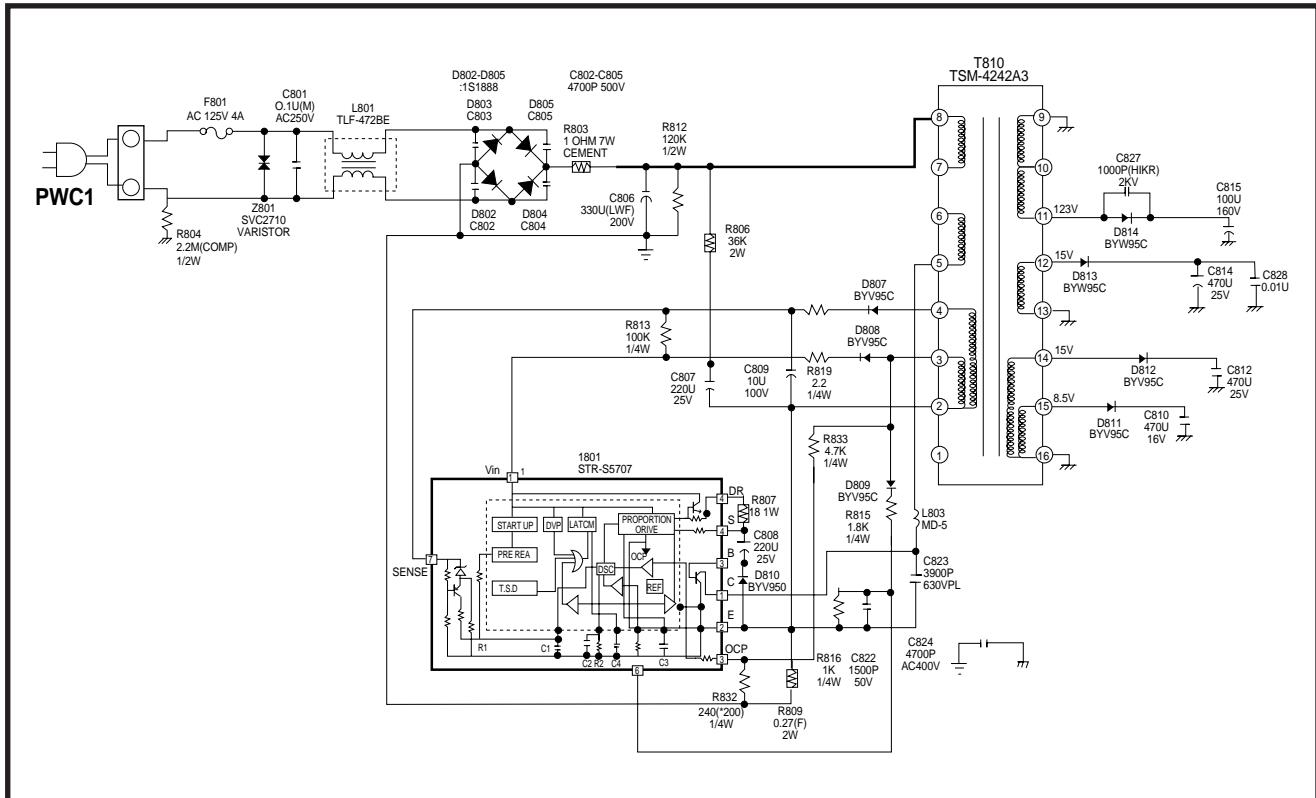
Symbol	Function
OVP	Built-in Overvoltage Protecton circuit
TSD	Built-In Thermal Shutdown Circuit

## 4) Internal Circuit Constant

R1	T ON Adjustment Trimming Resistor	R7	14KΩ	C4	0.01μF
R2	T OFF Adjustment Trimming Resistor	R8	2.5K	C5	1500pF
R3	1.0kΩ	R9	35kΩ		
R4	100Ω	C1	3300pF		
R5	85Ω	C2	0.01μF		
R6	Vs Adjustment Trimming Resistor	C3	820pF		

## 2-3. SMPS BASIC OPERATING DESCRIPTION

### 1) Power supply block circuit



### 2) Initial Operating Conditions

- When AC voltage is applied at PWC1, the bridge rectifier converts the output voltage to DC and is filtered by C806.
- This voltage is applied to pin 9(V in term.) of I801, through R806 thus starting the operation of I801.
- After C807 charges up to approx. 8V through series resistance R806, then the CTRL circuit starts operating.
- The time constant created by R806 and C807 determines the time delay before the CTRL circuit operation begins after the AC power is applied. Therefore if the value of C807 is high, it could delay the starting of I801 circuit.
- CTRL circuit operation begins when drive(oscillation) at pin 3 of T801, forward biases D808 and charges C809.
- When the voltage increases at pin 4 of T801, this forward biases D807 and charges C809. When the voltage across C809 turns off the power to T810.
- This results in the energy stored in the primary being induced into the secondary circuit.

---

### **3. DEFLECTION CIRCUIT**

Vertical, horizontal drive pulses originate at M52335ASP(I501). The vertical drive pulses are connected to Vertical Drive IC TA8445K(I301) and drive vertical deflection coils. This horizontal deflection drive pulses drive the horizontal output circuits and deflection coils and also supply 26.5v, 180v, high voltage 25kV, focus voltage and screen voltage by driving the FBT.

### **4. $\mu$ -COM CIRCUITS.**

Timer IC is M37267MX(I701) is made by Mitsubishi. Syscon receives the signal from the user's remote and it becomes serial-communication CLOCK/S DATA IN/S DATA OUT signal. Timer IC selects channel with CLOCK /DATA /EN and receives the functions to control TV and VCR driving(OSD, VOL CTRL, TV ON/OFF), and such functions as brightness, contrast, color, tint, sharpness, video signal, volume, caption and program recording.

### **5. CHANNEL SELECTION AND MEMORY**

User selects the channel, then the appropriate PLL data, clock and enable signals are sent out by the  $\mu$ -com, to the tuner.

The  $\mu$ -com communicates with I702(IC24LC01B) to memorize, channel numbers, volume and video settings.

---

## 6. SERVO/SYSCON CIRCUIT OPERATION

### 1) Summary

- When power is applied to the TV/VCR. The Servo-Syscon 1 chip confirms the operating mode of the deck mechanism, via the CAM SW. If the mechanism is not in its initial mode, the capstan motor will advance the mechanism to the proper position, depending if a tape is present or not. The deck is now ready to receive serial data from the timer IC.
- The Timer IC determines which function button has been pressed either on the unit or by the remote sensor. Then the timer IC sends data to the Syscon IC to initiate the selected mode of operation.
- When loading a tape, the L/C motor, capstan and drum motors are activated momentarily until the tape is threaded around the drum. This must occur before a normal screen will be observed.
- The drum servo system keeps the picture in sync both horizontally and vertically, by controlling the drum speed and phase.  
In PB mode the D-PG is compared against the reference signal, if required a error signal is sent to the D.PWM. This will correct for speed errors.
- Capstan servo system controls, the speed and phase of the tape. This prevents distorted audio and eliminates noise bands on screen. In addition it helps prevent a lot of on screen noise caused by tracking problems. Capstan control is accomplished by comparing the CTL signal, measured from the lower section of the A/C head. The Syscon IC then computes the error signal which is then sent to the C-PWM.

### 2) VCR OPERATING MODES

- (1) EJECT : MODE that a cassette ejects from the compartment.
- (2) STAND-BY : MODE that a cassette is unloading.
- (3) STOP : MODE that a cassette is loading.
- (4) FF : Fast Forward MODE that moves the tape forward from the STOP mode
- (5) REW : REWind MODE that moves the tape reversely from the STOP mode
- (6) REC : RECord MODE that records video and audio signal on the tapes.
- (7) PAUSE : record PAUSE MODE that makes recording stop.
- (8) PLAY : MODE that plays the record tape
- (9) STILL : play STILL MODE that playback is paused
- (10) CUE & REV : MODE that allows a tape to be searched in the forward or reverse direction.

## 7. NORMAL AUDIO CIRCUIT OPERATION

### 1. REC Mode

The input is applied to pin 16 of IU01 and is amplified by the Line Amp., through the ALC circuit. One output at pin 22 connects to the speaker. The second output through the REC AMP., pin 21, connects to the R/P head and 70KHZ bias oscillator circuit.

### 2. PB Mode

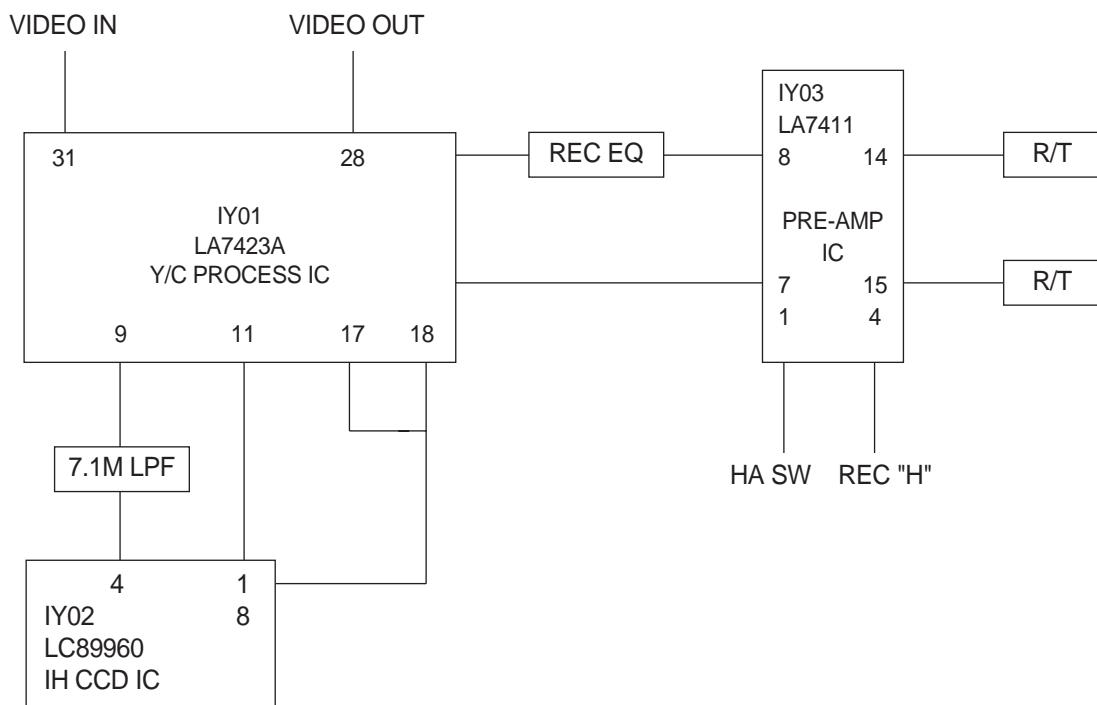
The audio signal from R/P head is input to pin 2 where it is amplified and equalized, then the signal is directed by the #1, SW to the appropriate mode. In normal mode the audio signal is once again amplified by the Line Amp. and re-directed to the TV.

## 8. VIDEO CIRCUIT OPERATION

### 1. EE mode

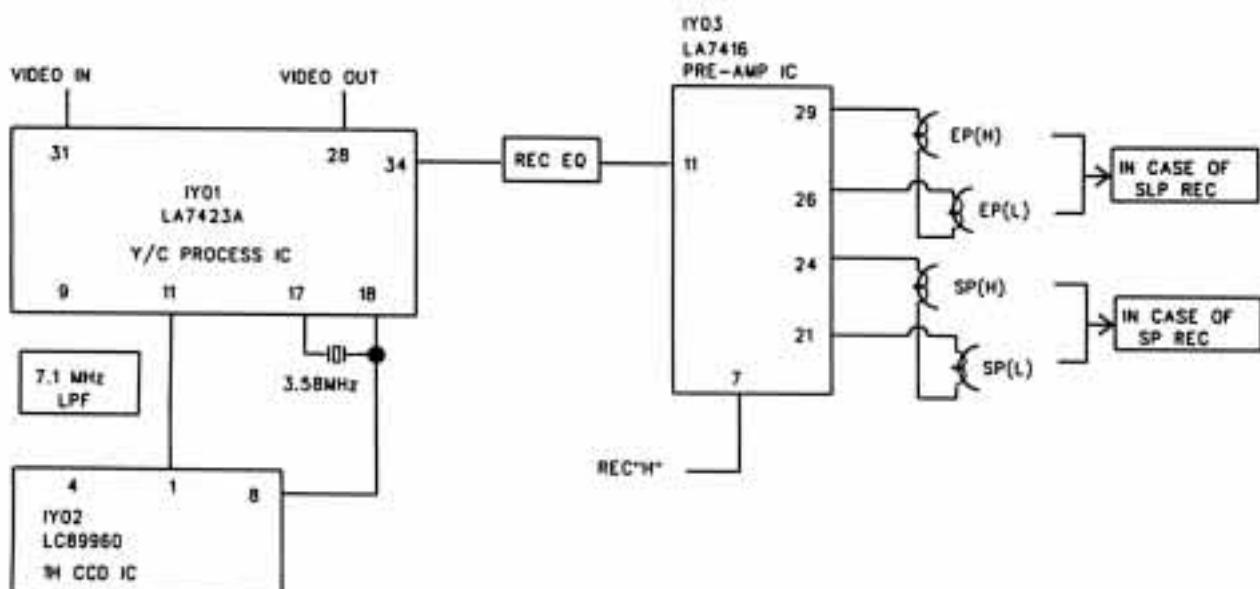
In EE mode video is applied to pin 31 of IY01 then it is output at pin 28. By the time the signal reaches the video output terminal, its amplitude has increased 2X by the AGC and video amp.

## 2. REC mode



- Composite video enters, IY01 at pin 31 where both the chroma and FM luminance signals are down converted to lower frequencies. These signals then pass through the REC EQ circuit where they are processed for the correct REC characteristics.
- The input signals at pins 7 and 8 of IY03 are processed by the AGC and REC CURRENT AMP., before they are recorded onto the tape through the video head assembly.

### 2-1. REC mode(TVZ-1341 : 4HD)



- 
- All signal flow is same to TVZ1321(2HD).
  - But, the difference between TVZ1321(2HD) and TVZ1341(4HD) is EP(SLP) Recording.
  - In case of 2HD, SP(H) & SP(L) heads are operated.
  - In case of 4HD, EP(H) & EP(L) heads are operated.

### 3. PB mode

- In the case of SP, the signals on pins #17, #20 of IY03(LA7411) are amplified to 60dB respectively and are output to pin #7 IY03 and is routed to pin #4 IY01(LA7423A)
- The FM signal input to pin #14 of IY01 where it is at FM DEMODULATED after passing through FM EQ. within IC and then is routed to the Y/C MIXER after passing through 3.0MHz LPF.
- The FM signal at pin 14 of IY01 is passed through the 1.3MHz LPF to allow only the low frequency chroma signals to pass through.
- The color signal is converted to 3.58MHz at Main CONVERTER and is routed to the Y/C MIXER after being amplified 6dB and then goes through ACC/BURST EMPHASIS. The Y/C signal is output at pin #28.

#### 3-1. PB Mode ( TVZ1321 : 4HD )

- All signal flow is same to TVZ1321(2HD).
- Pin number of LA7416 is differ from LA7411.
- But special playback case, in example Que, Review, Still, Slow, Some signals are needed.
- H.A switching and comp out and color Rotary.
- In case of 2HD, only 2 heads are operated, But in case of 4HD, 4 heads are operated.
- Above 3 signals are input and output through multiplexer IC(refer from TC4053BP).
- Comp out is output from LA7416 pin 3.
- This signal can switch SP and EP and detect large RF signal(Envelope).
- Color Rotary signal is exclusive OR Logic function of H.A sw and comp out.
- If these signals are correct, special playback function is normally operated.

# ■ IMPORTANT IC'S OPERATION

## ■ IY03 (LA7411)

1. Case Outline : DIP-24S (300mil) Plastic Package
2. Application : VHS format VTR Record and Playback Head Amplifiers
3. Maximum Ratings at  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	VCC max		7.0	V
Allowable power dissipation	Pd max	$T_a \leq 6.5^\circ\text{C}$	700	mW
Operating temperature	Topg		-10 to +65	°C
Storage temperature	Tstg		-40 to +150	°C

## 4. Operating conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	VC		5.0	V
Operating supply voltage range	VCC opg		4.80 to 5.50	V

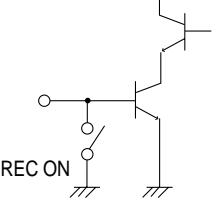
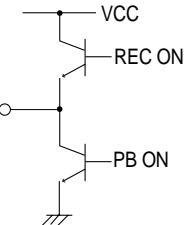
## 5. Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	In- -put	Out- -put	Conditions			min	typ	max	Unit
					T1	T2				
PB mode				T12:5.0V T10:OPEN T4:OPEN (PB)	EP/ SP	SW30 MUTE				
Current dissipation	I CCP			The current flowing into pins 12		0	14	18	22	mA
Voltage gain L H	CH1	GVP 1	T17A	T7A Vi = 38mVpp. f = 1MHz		0	56.5	59.5	62.5	dB
	CH2	GVP 2	T20A			2.5				
Voltage gain difference	$\Delta$ GVP 1			GVP1-GVP2			-1	0	1	dB
Input conversion noise distortion	CH1	VNIN 1	T17A	T7A VOUT/GVP1.2 after 1.1MHz LPF		0	1.1	1.5	$\mu$ Vrms	
	CH2	VNIN2	T20A			2.5				
Frequency characteristics	CH1	$\Delta$ V fp 1	T17A	T7A Vi=38mVpp. f=7MHz V OUT/GVP1.2 output ratio		0	-2.5	1		dB
	CH2	$\Delta$ Vfp 2	T20A			2.5				
Second harmonic distortion	CH1	V HDP 1	T17A	T7A Vi=38mVpp. f=4MHz (8M component)/ (4M component) Vi=38mVpp output ratio		0	-40	-35	dB	
	CH2	VHDP 2	T20A			2.5				
Maximum output level	CH1	V OMP 1	T17A	T7A $f=1\text{MHz}$ The output level when the third harmonic is-30dB.		0	1.0	1.2		$\text{Vpp}$
	CH2	V OMP 2	T20A			2.5				

## 6. Pin Function Table

No	Pin-function	Type	DC voltage(V)	Input/Output configuration	Remarks
1	HA (EP/SP)				1.6V 
2	RF-SW (REC-MUTE)				SW30 REC MUTE 1.0V  3.2V
3	H-SYNC				1.5V 
4	REC-H	PB	O		2.0V 
5	ENV DET OUT	PB	See attached sheet		
6 22	GND				
7	PB-OUT	PB	2.3		
	REC-C-IN	REC	3.6		
8	REC-Y-IN				
		REC	3.6		

No	Pin-function	Type	DC voltage(V)	Input/Output configuration	Remarks
9	AGC-FLT	PB	0		
		REC	1.6		
10	REC-CUR ADJ2	PB	2.5		4V : +3.5dB 2.5V : ±0dB (OPEN) 1V : -6dB
		REC	2.5		
11	REC-CUR ADJ1	PB	4.5		
		REC	5.0		
12	VCC				
13	REC-BIAS	PB	0		
		REC	1.7		
14	REC-OUT	PB	0		
		REC	4.2		
16 19	PB Amp 2'nd Filt	PB	2.0		
		REC	3.6		

No	Pin-function	Type DC voltage(V)		Input/Output configuration	Remarks
17 20	PB-L-IN -H-IN	PB	0.7		
		REC	0		
18 21	PB-L-SW -H-SW	PB	0		ON resistance 4 to 6Ω
		REC	4.2		
15 23 24	NC				

## 7. Pin Operation

### VIDEO PREAMP IC LA7411

PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
1	0	0	0	0	0	0	0
2	0	0	0	0	1.4	1.4	1.4
3	0	0	0	0	0	0	0
4	0	5.2	0	0	0.5	0	0
5	0.9	0	0.9	2.4	2.5	1.6	2.1
6	0	0	0	0	0	0	0
7	2.3	3.5	2.3	2.3	2.3	2.3	2.3
8	0	0	0	0	0	0	0
9	0	1.6	0	0	0	0	0
10	2.6	.2.6	2.6	2.6	2.6	2.6	2.6
11	5.1	4.3	5.1	5.2	5.2	5.2	5.2
12	5.1	5.2	5.1	5.2	5.2	5.2	5.2
13	0	1.7	0	0	0	0	0
14	0	4.2	0	0	0	0	0
15	5.2	5.2	5.2	5.2	5.2	5.2	5.2
16	2.1	3.8	2.1	2.1	2.1	2	2.1
17	0.7	0.7	0.7	0.7	0.7	0.7	0.7
18	0	4.2	0	0	0	0	0
19	2.1	3.8	2.1	2.1	2.1	2.1	2.1
20	0.7	0.9	0.7	0.7	0.7	0.7	0.7
21	0	4.2	0	0	0	0	0
22	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0

## ■ IY03 (LA7416)

### 1. Application : 4HD VHS format VTR Record and Playback Head Amplifiers

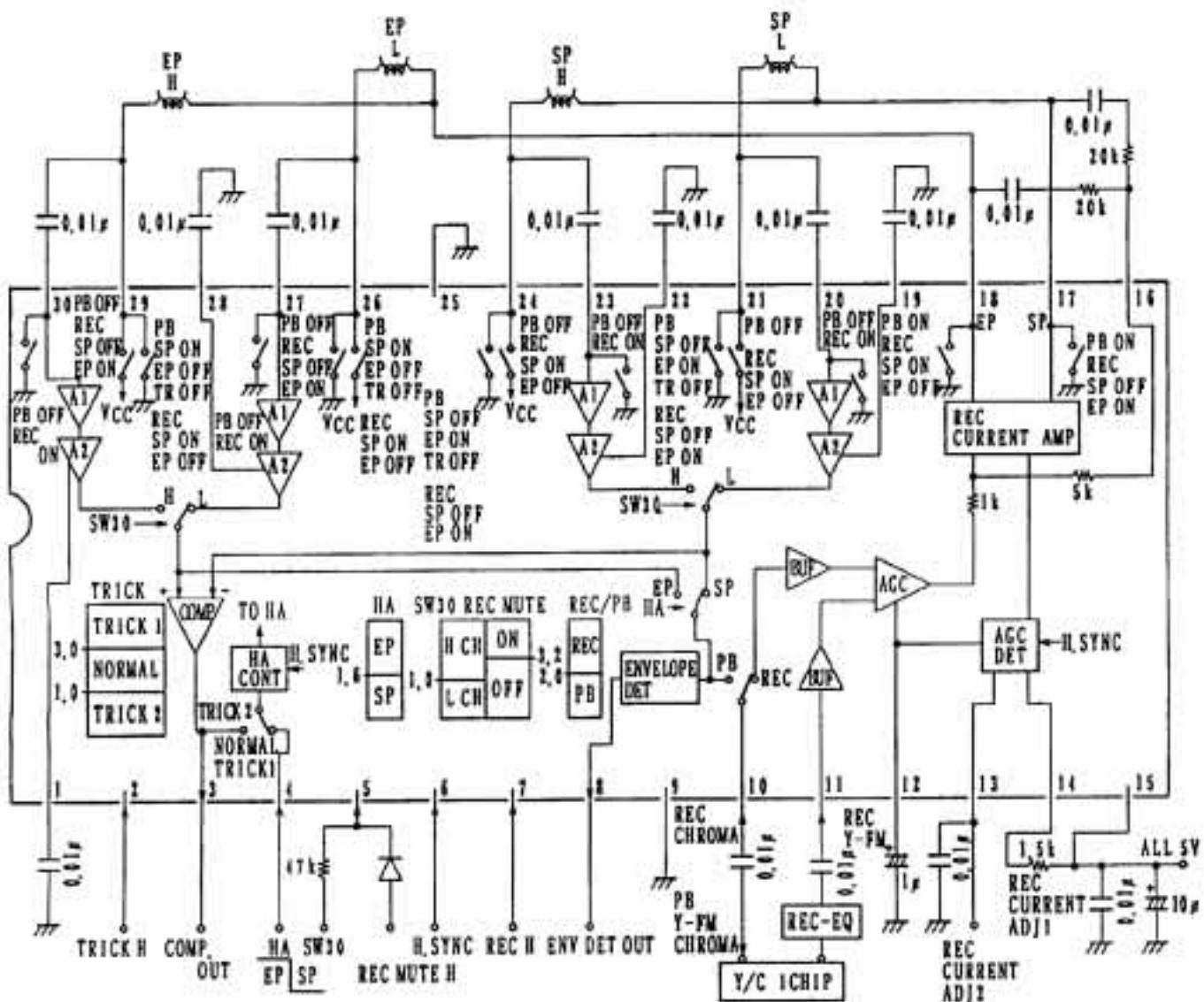
### 2. Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	VCC max		7.0	V
Allowable power dissipation	Pd max	$T_a \leq 6.5^\circ\text{C}$	650	mW
Operating temperature	Topg		-10 to +65	°C
Storage temperature	Tstg		-40 to +150	°C

### 3. Operating conditions at $T_a = 25^\circ\text{C}$

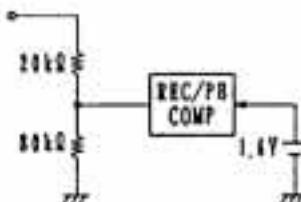
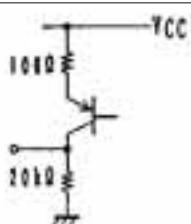
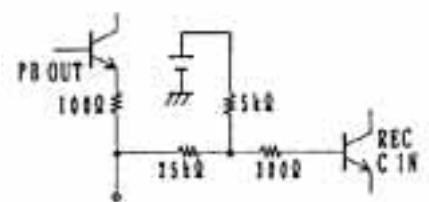
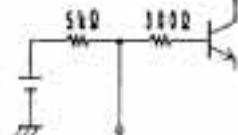
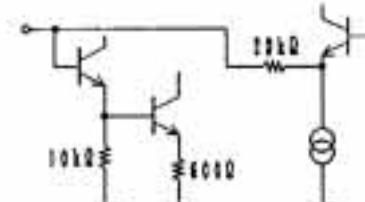
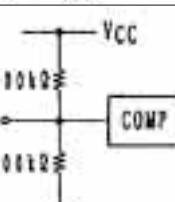
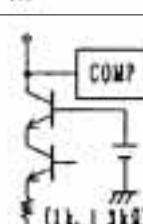
Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	VC		5.0	V
Operating supply voltage range	VCC opg		4.8 to 5.5	V

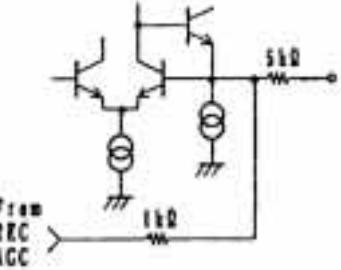
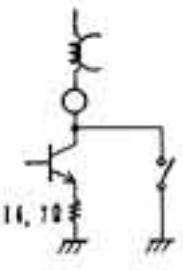
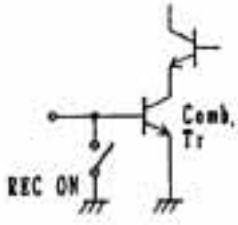
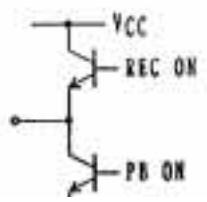
### 4. IC Logic Diagram



## 5. Pin Function Table

No	Pin-function	Type	DC voltage(V)	Input/Output configuration	Remarks
1 19 22 28	PB Amp 2' nd Filt	PB	2.0		
		REC	3.6		
2	TRICK-H				Trick 1 3.0V NORMAL 1.0V Trick 2
3	COMP-OUT	PB	H : 4.5 or more L : 0.7 or less		EP>SP ENV : High
		REC	OPEN		
4	HA (EP/SP)				1.6V EP SP
5	RF-SW (REC-MUTE)				SW30 REC MUTE 3.2V HCH ON LCH OFF 1.0V
6	H-SYNC				1.5V Syac H L

No	Pin-function	Type	DC voltage(V)	Input/Output configuration	Remarks		
7	REC-H	PB	0.0		2.0V <table border="1" data-bbox="1333 471 1396 561"> <tr> <td>REC</td> </tr> <tr> <td>PB</td> </tr> </table>	REC	PB
REC							
PB							
REC	5.0						
8	ENV DET OUT	PB	See attached sheet				
		REC	0.0				
9	GND						
10	PB-OUT	PB	2.3				
	REC-C-IN	REC	3.6				
11	REC-Y-IN						
		REC	3.6				
12	AGC-FLT	PB	0				
		REC	1.6				
13	REC-CUR ADJ2	PB	2.5		4V : +3.5dB 2.5V : ±0dB (OPEN) 1V : -6dB		
		REC	2.5				
14	REC-CUR ADJ1	PB	4.5				
		REC	5.0				
15	VCC						

No	Pin-function	Type	DC voltage(V)	Input/Output configuration	Remarks
16	REC-BIAS	PB	0		
		REC	1.7		
17 18	REC-SP OUT REC-EP OUT	PB	0		
		REC	4.2		
20 23 27 30	SP-L-IN SP-H-IN EP-L-IN EP-H-IN	PB	0.7		
		REC	0		
21 24 26 29	SP-L-SW SP-H-SW EP-L-SW EP-H-SW	PB	0		
		REC	4.2		
25	PRE-GND				

## ■ IY02 (LC89960)

### 1. Overview

The SANYO LC89960 is a 1H delay line for NTSC television systems.  
Only an external low-pass filter is required to implement a 1H delay line.

### 2. Features

- Single 5V power supply.
- 1H delay signal can be obtained with low-pass filter and 3.58MHz clock input.
- Minimum number of external components required because of timing generator, bias generator, output Amp, on-chipped.
- The phase of output signal is reversed to the phase of input signal.

### 3. Functions.

- 905 stage CCD shift register.
- Timing generator and clock driver for CCD.
- Auto-bias circuit.
- Sync tip clamp circuit.
- Sample and hold circuit and output Amp.
- 4fsc clock generator with PLL circuit.
- VCO (4fsc) output circuit.

### 4. Absolute Maximum Ratings

Items	Symbol	Unit	Min.	max.	Conditions
Supply Voltage	VDD	V	-0.3	+6.0	Ta = 25°C
Operating Temperature	TOPR	°C	-10	+60	
Storage Temperature	TSTG	°C	-55	+150	
Allowable Power : Dissipation	PD	mW	-	450	Ta = 25°C

### 5. Pin Operation

Y/C CCD IC LC89960

PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
1	2.2	2.2	2.2	2.2	2.2	2.2	2.2
2	2.5	2.5	2.5	2.5	2.5	2.5	2.5
3	0	0	0	0	0	0	0
4	2	2	2	2	2	2	2
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	1.2	1.2	1.2	1.2	1.2	1.2	1.2
9	5.2	5.2	5.2	5.2	5.2	5.2	5.2
10	2.1	2.1	2.1	2.1	2.1	2.1	2.1
11	2.1	2.1	2.1	2.1	2.1	2.1	2.1
12	5.2	5.2	5.2	5.2	5.2	5.2	5.2
13	9.4	9.4	9.4	9.4	9.4	9.4	9.4
14	0	0	0	0	0	0	0

## ■ IY01 (LA7423A)

1. Case Outline : DIP-36S(400mil) Plastic Package
2. Application : VHS VTR Video signal Processor (Y/C single-chip)
3. Maximum Ratings at  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	VCC max		7.0	V
Allowable power dissipation	Pd max	$T_a \leq 65^\circ\text{C}$	1070	mW
Operating temperature	Topg		-10 to + 65	$^\circ\text{C}$
Storage temperature	Tstg		-40 to + 150	$^\circ\text{C}$

### 4. Pin Operation

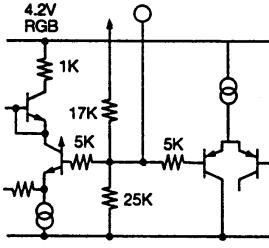
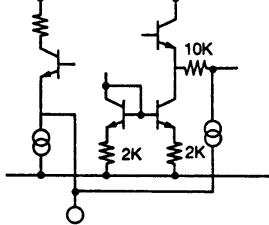
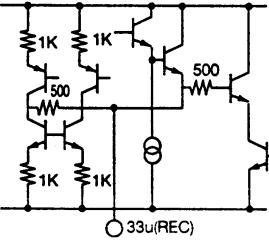
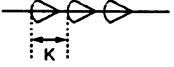
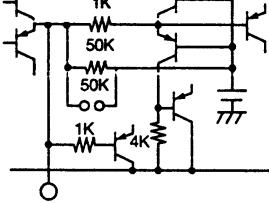
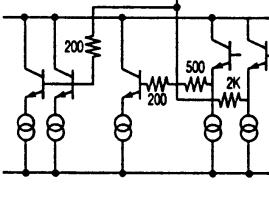
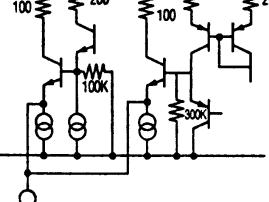
Y/C 1CHIP IC LA 7423

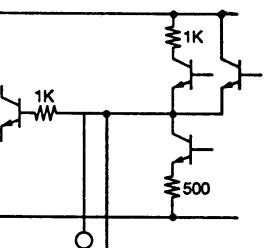
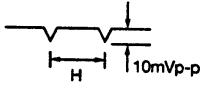
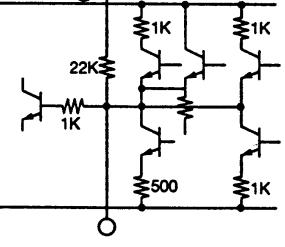
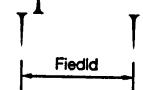
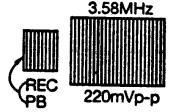
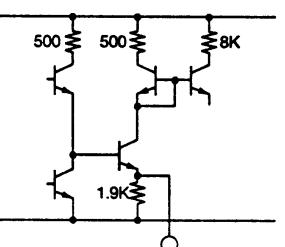
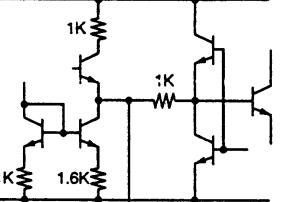
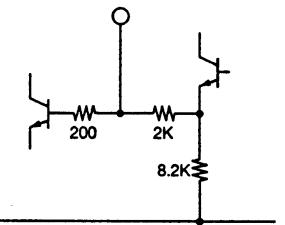
PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
1	0	0	4.8	0	4.8	0	4.8
2	2.4	2.4	1.9	2.4	2	2.4	2
3	3	3	3.2	3	3.1	3	3.1
4	2.3	2.3	4.7	2.3	4.7	2.3	4.7
5	2.3	2.3	4.7	2.3	4.7	2.3	4.7
6	3.1	3.1	3	3.1	3	3.1	3
7	0	0	3.6	1.8	3.6	1.8	3.6
8	3.1	3.1	3.1	3.1	3.1	3.1	3.1
9	2.1	2.1	2.1	2.1	2.1	2.1	2.1
10	0	0	0	0	0	0	0
11	1.1	1.1	1.1	1.1	1.1	1.1	1.1
12	2.5	2.5	2.5	2.5	2.5	2.5	2.5
13	2.5	2.5	2.5	2.6	2.5	2.6	2.5
14	2.5	2.5	3.3	2.5	3.3	2.5	3.3
15	2.1	2.1	2.1	2.3	2.1	2.3	2.1
16	2.1	2.1	2.1	2.1	4.6	2	5
17	3.9	3.9	3.8	3.9	3.8	3.9	3.8
18	2.8	2.8	2.7	2.8	2.7	2.8	2.7
19	2.7	2.7	2.7	2.7	2.7	2.7	2.7
20	2.7	2.7	2.7	2.7	2.7	2.7	2.7
21	1.9	1.9	1.9	1.9	1.9	1.9	1.9
22	2	2	2	2	2	2	2
23	1.6	1.6	1.6	1.6	1.6	1.6	1.6
24	5.1	5.1	5.1	5.1	5.1	5.1	5.1
25	4.2	4.2	4.2	4.2	4.2	4.2	4.2
26	0	0	0	0	0	0	0
27	5.1	5.1	5.1	5.1	5	5.1	5
28	1.8	1.8	1.8	1.8	1.7	1.8	1.8
29	0	0	0	0	0	0	0
30	2.7	2.7	2.7	2.7	2.7	2.7	2.7
31	3	3	3.5	3	3.5	3	3.5
32	1.5	1.5	1.8	1.5	1.7	1.5	1.6
33	0	0	0	0	0	0	0
34	3.1	3.1	3.7	3.1	4.6	3.1	4.6
35	0	0	3.6	0	3.6	0	3.6
36	5.2	5.2	3.7	5.2	3.7	5.2	3.7

## 5. IY01 (LA7423A : Y/C PROCESS IC)

No	Pin-function	Type voltage(V)	Signal waveform	Input/Output configuration	Remarks
1	SYNC-DET -OUT		DC		
	S-DET-OUT				
2	REC-Y	REC = 2.4V			
	MAIN. DE. EMPH-OUT	PB = 2.0V			
3	CLAMP	REC = 3.0V			
		PB = 3.2V			
4	EMPH-OUT	REC = 2.1V			
	R/P CTL	PB = 4.4V			
5	MAIN-EMPH -FILT	REC = 2.1V			
		PB = 4.4V			
6	NL FILT	REC = 3V			
		PB = 3V			

No	Pin-function	Type voltage(V)	Signal waveform	Input/Output configuration	Remarks
7	MODE-CTL		SP 0~1.5 [V] LP 1.5~3.2 [V] EP 3.2~5.0 [V]		
8	VCA-FILT	REC = 3V PB = 3V	DC		
9	VCA-IN	REC = 2.2V PB = 2.2V	 400mVp-p		
10	GND	0V			
11	CCD DRIVE	REC = 1.0V PB = 1.0V	 1.0V 400mVp-p		
12	PIC-CTL EDIT	REC = 3V PB = 3V	SOFT : 2.0~2.5V HARD : 2.6V~3.2V EDIT when over 3.5V		

No	Pin-function	Type voltage(V)	Signal waveform	Input/Output configuration	Remarks
13	NC-CTL	REC = 2.5V			
		PB = 2.5V	under 1.5V N.C OFF 2.0~3.0V N.C CTL over 3.8V Y/CMix OFF (N.C. Center)		
14	REC C-OUR	REC = 2.4V			
		PB = 3.2V	Y-FM +Low Chroma		
15	AGC-TC 1	REC = 2.4V			
		PB = 2.3V			
16	REC-APC-FILT TRICK-H	REC = 2.3V			
		PB = over 3.5V (SP Mode)			
17	VXO-IN	REC = 3.8V			
		PB = 3.8V			
18	XO-OUT	REC = 2.3V			
		PB = 2.4V			

No	Pin-function	Type voltage(V)	Signal waveform	Input/Output configuration	Remarks
19	SLD-FILT	REC = 2.8V			
		PB = 2.8V			
20	AFC/APC FILT	REC = 2.8V			
		PB = 2.8V			
21	C-OUT	REC = 1.9V XO mode when over 3.5V			
		PB = 1.9V CNR ON when over 3.5V			
22	KILL-FILT	Color = 1.9V			
		Killer = 3.1V			
23	CNR-CD-IN	REC = 1.7V			
		PB = 1.7V CNR OFF when over 2.5V			
24	VCC-2	5.0V	D.C		

No	Pin-function	Type voltage(V)	Signal waveform	Input/Output configuration	Remarks
25	REG = 4.2	4.2V	D.C		
26	SYNC OUT		4.2V-----0V		
		1.75V when CNR mode			
27	VCC-1				
28	VIDEO OUT		2Vp-p		
29	QV. QH INS. CHARA INS				
30	ROT-PLS		5.0V-----0V		

No	Pin-function	Type voltage(V)	Signal waveform	Input/Output configuration	Remarks
31	VIDEO-IN	REC = 2.7V			
		PB = 2.7V			
32	AGC-TC2	REC = 1.6V			
		PB = 1.6V			
33	SVHS-FM-IN	REC = 0V			
		PB = 3.7V Normal VHS 0V			
34	MOD-OUT DOC-STOP-H	REC = 3.0V			
		PB = 3.6V			
35	NOR-FM-IN	REC = 0V			
		PB = 3.8V			
36	FM-EQ-OUT	REC = 1V			
		PB = 3.8V			

## ■ IU01 (BA7790LS)

### 1. FUNCTION

- (1) Circuit essential for a standard sound signal processing system as a PB AMP, REC AMP, ALC circuit, EQ selecting switch and high voltage head switch have been integrated onto a single 1 chip.
- (2) Built-in LINE/TUNER INPUT selecting switch.
- (3) Built-in summary 3 mode EQ switch and it can be obtained EQ characteristics of each mode.
- (4) PB AMP is low noise and high performance.
- (5) Built-in ALC circuit with variable ALC level setting.
- (6) No shock noise or ALC attack noise is generated when power source is turned ON or the mode is changed by means of a ALC loop outside mute system.

### 2. Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	Vcc	13	V
Power dissipation	Pd	※ 400	mW
Operating temperature	Topr	-10~+65	°C
Storage temperature	Tstg	-55~+125	°C

※ Derate 4.0mW/°C for the operating above Ta = 25°C

### 3. Recommended Operational Conditions (Ta = 25°C)

Parameter	Symbol	Range	Unit
Power supply voltage	Vcc	7.5~12.5	V

### 4. Pin

AUDIO IC BA7790LS

PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
1	0	0	0	0	0	0	0
2	4.6	4.6	4.6	4.6	4.6	4.6	4.6
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	11.2	11.2	11.2	11.2	11.2	11.2	11.2
6	4.7	4.7	4.7	4.7	4.7	4.7	4.7
7	11.4	11.4	11.4	11.4	11.4	11.4	11.4
8	4.7	4.7	4.7	4.7	4.7	4.7	4.7
9	0	0	3.8	0	3.7	0	0
10	4.7	4.7	4.7	4.7	4.7	4.7	4.7
11	0.6	0.6	5.2	0.6	5.2	0.6	5.2
12	5.3	5.3	5.3	5.3	5.3	5.3	5.3
13	4.6	4.6	4.6	4.6	4.6	4.6	4.6
14	0.6	0.6	0	0.5	0	0.5	0
15	5.4	5.4	5.3	5.4	5.3	5.4	5.4
16	5.3	5.3	5.3	5.3	5.3	5.3	5.3
17	0	0	0	0	5	0	5
18	5.3	5.3	5.3	5.3	5.3	5.3	5.3
19	5.4	5.4	5.3	5.3	5.4	5.4	5.4
20	0	0	0	0	0	0	0
21	5.4	5.4	5.3	5.4	5.4	5.4	5.4
22	5.4	5.4	5.3	5.4	5.4	5.3	5.3
23	0	0	0	1	0	0	0
24	0.5	5.2	0.5	0.5	0	0.5	0.5

## 5. Terminal Function Table

Terminal No.	Description	Function	Terminal Voltage	Terminal Form
1	HEAD EQ	Switch for selecting the head resonance capacitor	0.0V	220kΩ/27Ω(ON)
2	PB IN	PB AMP input/PB side head switch	3.4V	REC : 120kΩ REC : 11Ω(ON)
3	REC HSW	REC side high voltage head switch	0.0V	REC : 11Ω(ON) REC : OPEN
4	GND	GND (for PB AMP, Head switch)	0.0V	—
5	RIPPLE FILTER	Ripple filter	9.0V	10kΩ(Vcc)
6	PB NFB	PB AMP feedback	3.5V	B(NPN)
7	Vcc	Vcc	9.0V	—
8	PB EQ	PB EQ selecting switch	3.5V	55Ω(ON)/OPEN
9	EQ CTRL	EQ control	—	
10	PB OUT	EQ AMP output	3.5V	EE
11	PB/TU/EE CTRL	PB/TU/EE control	—	
12	PB LINE IN	Line input for PB	4.1V	120kΩ
13	ALC LEVEL	ALC Level setting terminal	—	B(PNP)
14	ALC FILTER	Terminal for ALC filter with time constant (Setting attack and recovery time)	PB : 0.0V PB : variable	EE(NPN)~220Ω
15	BIAS	Bias	4.1V	EE(NPN) Isink = 670μA
16	LINE IN	Line input	4.1V	120kΩ
17	MUTE CTRL	MUTE control	—	
18	TUNER IN	Tuner input	4.1V	120kΩ
19	REC NFB	REC AMP feedback	4.1V	B(NPN)
20	GND	GND	0.0V	—
21	REC OUT	REC AMP output	4.1V	EE(P-P)
22	BF OUT	Line AMP OUTPUT	4.1V	EE(P-P)
23	REC EQ	REC EQ selecting switch	0.0V	100kΩ/22Ω(ON)
24	REC/EE CTRL	REC/EE control	—	

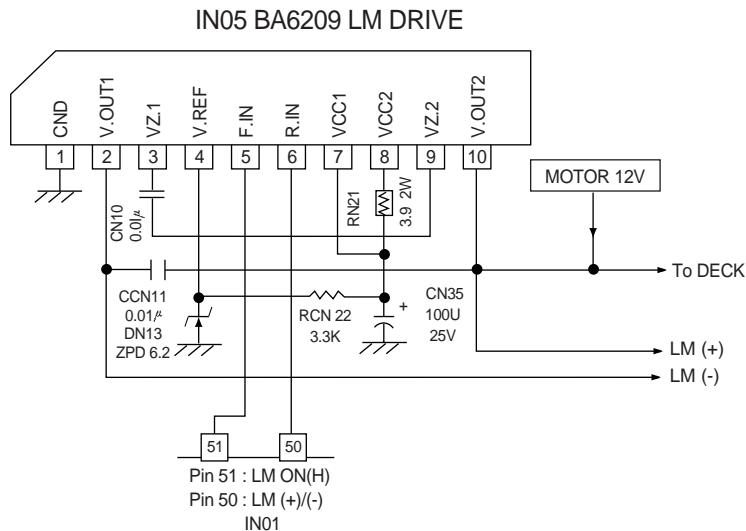
### NOTE :

- Terminal form abbreviations : EE : emitter follower, P-P : push pull, B : base, C : collector.
- All figures are measured at Vcc = 9V at no signal condition.
- All figures show standard values.

## ■ IN05(BA6209)

### 1. Function : Reversible Motor Driver

### 2. Pin Operation



## ■ IN03 (MC4558C)

### 1. Function : Dual wideband operational amplifier

### 2. Pin Operation

**DUAL OP AMP MC4558C**

PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
1	3.2	3	3.3	3.3	3.3	3.2	3.4
2	3.1	3	3.2	3.2	3.2	3.2	3.2
3	3.1	3	3.2	3.2	3.2	3.3	3.3
4	0	0	0	0	0	0	0
5	2.8	2.7	3.3	3.3	3.3	3.6	3.6
6	0.9	0.9	3.2	3.2	3.2	3.3	3.3
7	1.4	1.4	3.7	3.7	3.7	5.3	5.3
8	6	6	6	6	6	6	6

## ■ I503(TC4066BP)

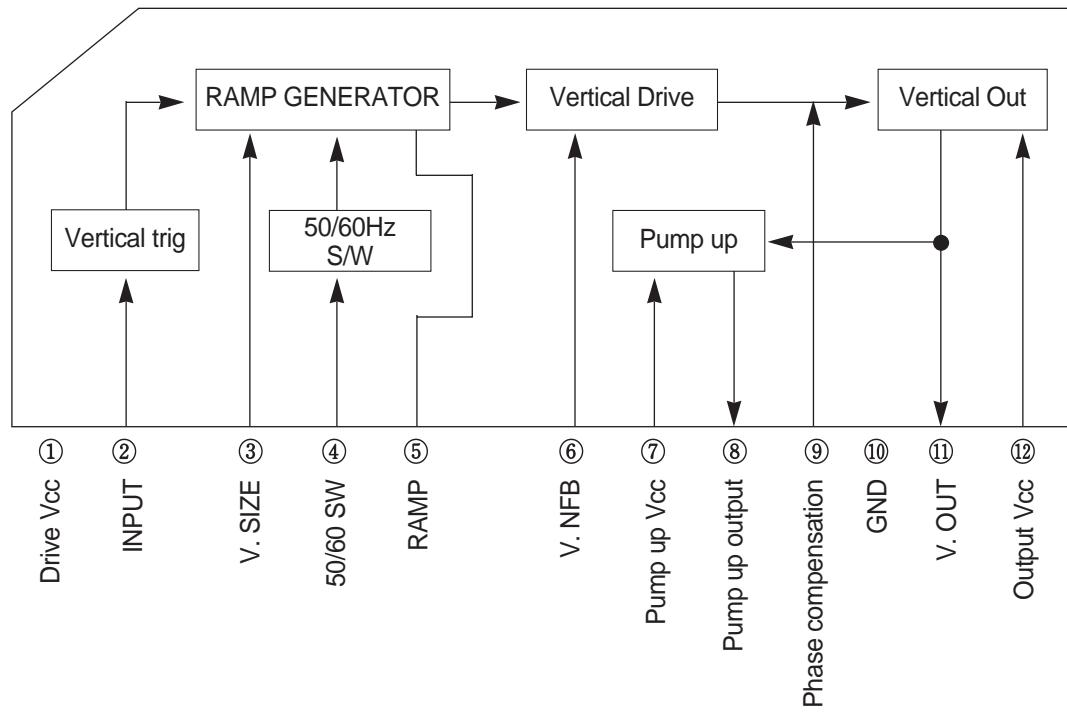
### 1. Four independent circuits of bidirectional switches

### 2. Pin operation

**SWITCHING IC TC4066BP**

PIN \ MODE	STOP	REC	PLAY	PIN \ MODE	STOP	REC	PLAY
1	6	6	6	8	0	0	0
2	5.3	0	5.3	9	5.7	0	0
3	0	0	0	10	0	5.7	0
4	0	0	0	11	3.8	3.7	4
5	3.5	0	0	12	2.3	3.8	2.6
6	3.5	0	0	13	2.3	3.8	2.6
7	3.6	4.2	4.1	14	2.3	2.6	2.6

## I301(TA8445K)



### 1. Operating Conditions ( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Min	Typ.	Max.	Unit
Drive vcc	V <sub>CC1</sub>	8.1	9.0	9.9	V
Pump up Vcc	V <sub>CC2</sub>	—	2.4	2.9	V
Vertical Output Vcc	I <sub>11</sub> P-P	—	—	2.2	A <sub>p-p</sub>

### 2. Operating Characteristics ( $T_a = 25^\circ\text{C}$ , $V_{CC1} = 9\text{V}$ , $V_{CC2} = 24\text{V}$ )

Item	Symbol	Measurement Condition	Min	Typ.	Max.	Unit
Drive current	I <sub>CC1</sub>	1	2.0	5.0	12	mA
Trig input threshold Voltage	V <sub>2</sub>	2	—	—	1.0	V
Vertical range control voltage (1)	V <sub>60/3</sub>	3	1.0	1.5	2.0	V
Vertical range control voltage (2)	V <sub>50/3</sub>	11	0.75	1.25	1.75	V
Maximum output voltage	V <sub>5</sub>	4	3.5	4.8	6.0	V
Maximum peak to peak Voltage	V <sub>5P-P</sub>	4	3.5	4.5	5.5	V <sub>P-P</sub>
Output transistor saturation Voltage(1)	V <sub>S11-10</sub>	5	0.3	0.5	1.0	V
Output transistor saturation Voltage(2)	V <sub>S12-11</sub>	6	1.0	1.8	3.6	V
Pump up output Voltage (1)	V <sub>S7-8</sub>	7	1.0	2.0	3.0	V
Pump up output Voltage (2)	V <sub>S8-10</sub>	8	0.2	0.8	1.6	V
No signal Current	I <sub>b</sub>	9	—	2.6	—	mA
Center Voltage	V <sub>CENTER</sub>	10	8.0	12.0	14.0	V

■ IN01 (Syscon : TMP91C642AN-3227)

**SYSCON IN01**

PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
1	5.2	5.2	5.2	5.1	5.1	5.1	5.1
2	3.5	3.4	3.8	3.5	3.6	3.6	3.7
3	4.6	4.6	4.6	4.6	4.6	4.6	4.6
4	5.2	5.2	5.2	5.2	5.2	5.2	5.2
5	0	0	0	0	0	0	0
6	5.2	5.2	5.2	5.2	5.2	5.2	5.2
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	3.6	3.1	3.3	3.3	3.3	2.8	3.6
10	2.8	2.8	2.8	2.8	2.8	2.8	0
11	5.2	0	0	0	5.2	5.2	0
12	0	0	0	0	0	0	0
13	5.2	5.2	5.2	5.2	5.2	5.2	5.2
14	0	var	var	var	var	5	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	5	2.6	2.5	2.5	2.6	2.6	2.6
18	0	4.8	4.8	4.8	4.8	4.8	4.8
19	0	2.7	2.7	2.7	2.7	2.7	2.7
20	4.7	3.2	3.2	3.2	3.2	4.7	4.7
21	5.2	5.2	5.3	5.3	5.3	5.3	5.3
22	0	0	0	0	0	0	0
23	0	2.6	2.6	2.6	2.6	2.6	2.6
24	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0
26	4.5	var	3.9	3.8	3.8	0	3.8
27	3.7	3.7	4.2	3.8	3.8	3.8	3.8
28	3.7	3.7	4.2	3.7	3.7	3.7	3.7
29	0	0	4.7	0	4.7	0	4.7
30	2.4	2.4	2.5	2.4	2.5	2.4	2.5
31	0	2.8	2.8	2.8	2.8	0	5.2
32	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0
35	5.2	0	5.2	5.2	5.2	5.2	5.2
36	5.2	5.2	0	5.2	0	5.2	0
37	0	5.2	5.2	5.2	0	5.2	0
38	5.2	0	0	0	0	0	0
39	2.9	5.2	5.2	5.2	5.2	5.2	5.2
40	5.2	3.1	3	3	3	2.9	2.9
41	0	5.2	5.2	5.2	5.2	5.2	5.2
42	0	0	0	0	5.2	0	5.2
43	0	0	0	0	0	0	0
44	5.2	5.2	5.2	5.2	5.2	5.2	5.2
45	2.5	2.5	2.5	2.5	2.5	2.5	2.5

PIN \ MODE	STOP	REC	PLAY	REW/FWD	REV/FF	PAUSE	STILL
46	5.2	5.2	5.2	5.2	5.2	5.2	5.2
47	2.2	2.2	2.2	2.2	2.2	2.2	2.2
48	2.1	2.1	2.1	2.1	2.1	2.1	2.1
49	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0
54	2.1	3.5	3.5	3.5	2.1	3.5	3.5
55	2.6	2.6	2.6	2.1	5.2	2.6	2.6
56	5	5	5	5	5	5	5
57	5.2	5.2	5.2	5.2	5.2	5.2	5.2
58	5.3	5.3	5.3	5.3	5.3	5.3	5.3
59	3.1	3.1	3.1	3.1	3.1	3.1	3.1
60	0.6	0	2.9	2.1	2.4	1.8	2.1
61	5.3	5.3	5.3	5.3	5.3	5.3	5.3
62	5.3	5.3	5.3	5.3	5.3	5.3	5.3
63	0	0	0	0	0	0	0
64	5.3	5.3	5.3	5.3	5.3	5.3	5.3

PIN	PIN NAME	PIN	DESCRIPTION
1	S/CLK	Serial Clock	
2	S/OUT	Serial OUT, Contact with TIMER IC Serial IN	
3	S/IN	Serial IN, Contact with TIMER IN Serial OUT	
4	SYNC (L)	NOT USED	
5	VCR/ON(L)	NOT USED	
6	LINE/TV	NOT USED	
7		NOT USED	
8	C/SYNC	Composite Sync	
9	SLOW STEP	Adjusting Vth of CTL/P, Sets "L" during SLOW mode	
10	C. I LIMITER	Limit the current of CAP. M/T Sets 'L' during SLOW MODE	
11	CAP F/R	Switching forward(H)/reverse(L) of CAP. M/T	
12	C/SYNC	Composite SYNC	
13	REMOCON IN	REMOTE controller signal	
14	REEL PULSE	Take Up Reel Pulse IN	
15	STROBE	Port to have S.DATA with TUNER	
16	RENTAL(H)	Set on 'H' when rental	
17	D/FG	Drum FG	
18	D/PG	Drum PG	
19	C/FG	Caption FG	
20	PB/CTL	Caption APC, SLOW & RTC & VISS DETECT	
21	EVER 5.3V	EVER 5.3V	
22	QV/SYNC	WHen special play, Quasi Vertical SYNC	
23	V/SW	Video head Switching	
24	A/SW	Audio head Switching	
25	H. A. SW	Video head switching out, SP(L)	
26	REC-LED(L)	Light up when REC	
27	STAND-BY(L)	Light up when STAND-BY	
28	T. REC	Lights up when timer recording stand-by and blinks when timer recording REPEAT	

PIN	PIN NAME	PIN	DESCRIPTION
29	AUDIO SLP(H)	Set 'H' When SLP mode.	
30	D/PWM	Drum motor control PWM output  *period of PWM : 23.4KHz (6MHz/256)	
31	C/PWM	Capstan motor PWM output  * period of PWM : 23.4KHz (6MHz/256)	
32	GND(D)	Digital GND	
33		NOT USED	
34	CST IN(L)	NOT USED	
35	REC(L)	Set 'L' when recording	
36	EE(H)	Set 'H' when EE/REC mode with TIME delay, in case of VIDEO mode	
37	TRICK (L)	Set 'L' when special play, Audio MUTE output	
38	SP(L)	Tape speed SP(L) output	
39	LP(L)	Tape speed LP(L) output	
40	R/CTL	Change Record CTL DUTY when MARK & ERASE mode	
41	2HD/4HD	4HD (L) OR 2HD (H)	
42	A. MUTE (H)	Audio Mute output when special record	
43	NTSC(L)	NTSC(L)/PAL(H) switching output	
44	SP TRICK(L)	Set 'L' when SP mode	
45	CLK	NOT USED	
46	RESET(L)	RESET	
47	OSC/IN	SYSTEM CLOCK CRYSTAL(10MHz)	
48	OSC/OUT	SYSTEM CLOCK CRYSTAL (10MHz)	
49	GND		
50	LM(+)/LM(-)	Loading motor forward(L), reverse(H)	
51	LM ON(H)	Set 'H' when operates loading motor	
52	T/START(L)	Tape START sensor input	
53	T/END(L0)	Tape END sensor input	

PIN	PIN NAME	PIN	DESCRIPTION				
54	CAM A	CAM Detection input port					
55	CAM B						
	CAM C	POWER	A	B	C	D	MODE
	CAM D	2.9 ~ 3.7	L	H	H	H	EJECT 4.35(H)
		3.7 ~ 4.5	L	H	H	L	STAND-BY(INITIAL) 4.35(L)
		2.2 ~ 2.9	H	H	H	L	REV 5.30(L)
		2.9 ~ 3.7	H	H	L	L	STOP 2.65(L)
		0.0 ~ 2.2	H	H	L	H	PLAY, QUE 2.65(H)
		2.2 ~ 2.9	H	L	H	L	FF/REW 2.10(L)
		4.5 ~ 5.0	H	H	H	H	CAM 5.0(H)
56	KEY 1 &	VTR function key input					
57	KEY 2						
58	TRK DLY	PATH adjustment TRACKING DELAY					
59	PG DLY	PG DLY adjustment * PG DLY adjustment range 5.625 degree – 11.25 degree – 28.125 degree (0V) – (CENTER) – (5V)					
60	ENVE DET.	*Maximum POINT SEARCH DC ENVE input *AUTO TRACKING RESTART CONDITION. (SP : 2~5V, SPL, LP : 1.5~5V) <ul style="list-style-type: none"> <li>• CASSETTE IN → in play mode</li> <li>• When tape speed is changed, in play mode</li> <li>• PB/CTL PULSE off → PB/CTL PULSE on</li> </ul>					
61	SYSTEM SEL	NOT USED					
62	EVER 5.3V	EVER 5.3V					
63	GND(A)	Analogue GND					
64	EVER 5.3V	EVER 5.3V					

## ■ I701(Timer : M37267M6 - 103SP)

### 1. Pin Layout

**M37267M6 - 103SP**

HSYNC INPUT	1	HSYNC	P52/R	52	→ R OUT
VSYNC INPUT	2	VSYNC	P53/G	51	→ G OUT
AFT INPUT	3	P40/MXR/AD4	P54/B	50	→ B OUT
N. C.	4	P41/INT2/MXG	P55/OUT1	49	→ BLINKING OUTPUT
SYNC DETECT INPUT	5	P42/TIM2/MXB	P04/PWMO	48	→ CONTRAST PWM OUTPUT
N. C.	6	P43/TIM3/MXOUT	P05/PWM1	47	→ BRIGHT PWM OUTPUT
N. C.	7	P24/AD3	P06/PWM2	46	→ SHARPNESS PWM OUTPUT
N. C.	8	P25/AD2	P07/PWM3	45	→ VOLUME PWM OUTPUT
MONITOR POWER ON(L) OUTPUT	9	P26/AD1	P20	44	→ AUDIO MUTE (H) OUTPUT
SERIAL STROBE OUTPUT	10	P27	P21	43	→ VIDEO MUTE (H) OUTPUT
TINT PWM OUTPUT	11	P00/PWM4	P22	42	→ TV(L)/AV/(H) OUTPUT
COLOR PWM OUTPUT	12	P001PWM5	P23	41	→ VER SW OUTPUT
PLL STROBE OUTPUT	13	P02/PWM6	P10/OUT2	40	N. C.
SERIAL DATA OUTPUT	14	P17/SIN	P11/SCL1	39	→ EEPROM CLOCK OUTPUT
POWER FAIL OUTPUT	15	P44/INT1	P12/SCL2	38	N. C.
SERIAL/PLL DATA OUTPUT	16	P45/SOUT	P13/SDA1	37	↔ EEPROM DATA INPUT/OUTPUT
SERIAL/PLL CLOCK OUTPUT	17	P46/SCLK	P14/SDA2	34	N. C.
+5V	18	AVCC	P05	35	N. C.
R,C FILTER CONNECT	19	HLF	P16	34	N. C.
R CONNECT	20	RVCO	P03	33	N. C.
C CONNECT	21	VHOLD	P30	32	N. C.
COMPOSITE VIDEO INPUT	22	CVIN	P31	31	N. C.
GND	23	CNVSS	RESET	30	→ RESET INPUT
MAIN CLOCK (4.19MHz)	24	XIN	P64/OSC2/XCOUT	29	→ SUB CLOCK(32.768KHz)
MAIN CLOCK (4.19MHz)	25	XOUT	P63/OSC2/XCIN	28	← SUB CLOCK (32.768KHz)
GND	26	VSS	VCC	27	— +5V

## 2. Pin Description

PIN NO	NO	NAME	DESCRIPTION	1/O	ACTIVE
1	H SYNC	H SYNC	H SYNC INPUT TERMINAL	I	
2	V SYNC	V SYNC	V SYNC INPUT TERMINAL	I	
3	P4 <sub>0</sub> /MXR/AD4	AFT	AFT SIGNAL INPUT TERMINAL	I	
4	P4 <sub>1</sub> /INT2/MXG	N. C.	NOT USED	-	
5	P4 <sub>2</sub> /TIM2/MXB	SD	SYNC DETECT INPUT TERMINAL	I	HIGH
6	P4 <sub>3</sub> /TIM3/MXOUT	N. C.	NOT USED	-	
7	P2 <sub>4</sub> /AD3	N. C.	NOT USED	-	
8	P2 <sub>5</sub> /AD2	N. C.	NOT USED	-	
9	P2 <sub>6</sub> /AD1	MONITOR ON	MONITOR POWER ON OUTPUT SIGNAL	O	LOW
10	P2 <sub>7</sub>	S. STROBE	SERIAL STROBE OUTPUT SIGNAL	O	LOW
11	P0 <sub>0</sub> /PWM4	TINT	TINT PWM OUTPUT SIGNAL	O	
12	P0 <sub>1</sub> /PWM5	COLOR	COLOR PWM OUTPUT SIGNAL	O	
13	P0 <sub>2</sub> /PWM6	PLL STROBE	PLL STROBE OUTPUT SIGNAL	O	
14	P1 <sub>7</sub> /SIN	S. DATA IN	SERIAL DATA INPUT SIGNAL	I	
15	P4 <sub>4</sub> /INT1	POWER FAIL	POWER DATA INPUT SIGNAL	I	LOW
16	P4 <sub>5</sub> /SOUT	S. DATA OUT	SERIAL/PLL DATA OUTPUT SIGNAL	O	
17	P4 <sub>6</sub> /SCLK	S. CLOCK	SERIAL/PLL CLOCK OUTPUT SIGNAL	O	
18	AVcc	AVCC	Analog Vcc(+5V)	-	
19	HLF	HLF	R,C FILTER CONNECT TERMINAL		
20	RVCO	RVCO	R CONNECT TERMINAL		
21	VHOLD	V HOLD	C CONNECT TERMINAL		
22	CVIN	CVIN	Composite video INPUT TERMINAL	I	
23	CNVss	GND	ANALOG GND terminal	-	

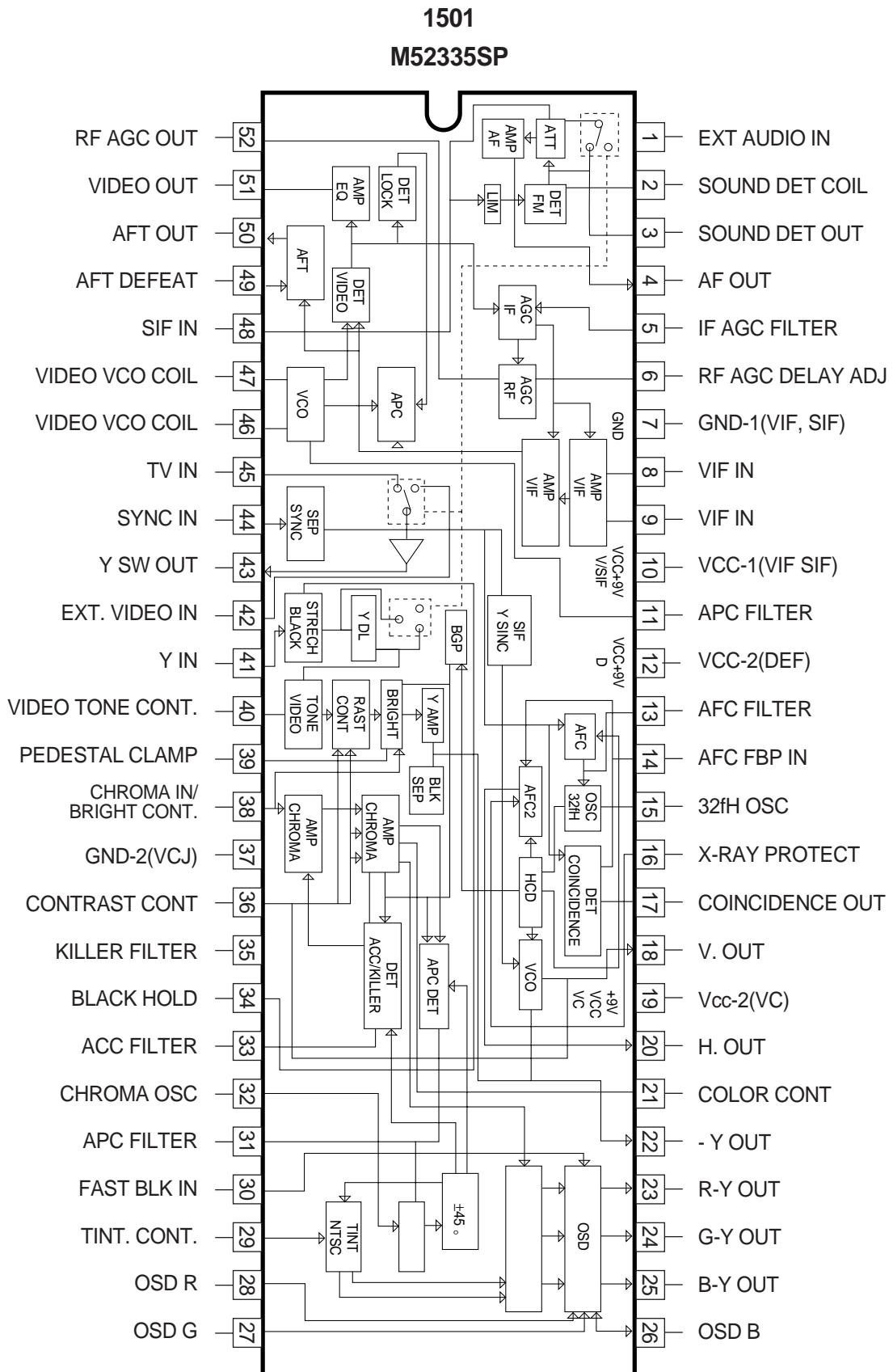
PIN NO	NO	NAME	DESCRIPTION	1/O	ACTIVE
24	XIN	X IN	MAIN CLOCK (4.19MHz)	I	
25	XOUT	X OUT	MAIN CLOCK (4.19MHz)	O	
26	VSS	GND	MAIN CPU GND TERMINAL	-	
27	VCC	VCC	MAIN CPU POWER TERMINAL (+5 CONNECT)	-	
28	P63/OSC2/XCIN	OSC2	SUB CLOCK (32.768KHz)	I	
29	P64/OSC2/XCOUT	OSC1	SUB CLOCK (32.768KHz)	O	
30	<u>RESET</u>	RESET	CPU RESET INPUT TERMINAL	I	LOW
31	P31	N. C.	NOT USED	-	
32	P30	N. C.	NOT USED	-	
33	P03	N. C.	NOT USED	-	
34	P16	N. C.	NOT USED	-	
35	P05	N. C.	NOT USED	-	
36	P14/SDA2	N. C.	NOT USED	-	
37	P13/SDA1	E2PROM DATA	E2 PROM DATA IN/OUT TERMINAL	I/O	
38	P12/SCL2	N. C.	NOT CONNECTED	I	
39	P11/SCL1	E2PROM CLOCK	E2 PROM CLOCK OUTPUT TERMINAL	O	
40	P10/OUT2	N. C.	NOT CONNECTED	O	
41	P23	VER SW		O	
42	P22	TV/AV	TV (L) AV(H) OUTPUT TERMINAL	O	
43	P21	V MUTE	VIDEO MUTE(H) OUTPUT TERMINAL	O	HIGH
44	P20	A MUTE	AUDIO MUTE(H) OUTPUT TERMINAL	O	HIGH
45	P07/PWM3	VOLUME	VOLUME PWM OUTPUT TERMINAL	O	
46	P06/PWM2	SHARP	SHARPNESS PWM OUTPUT TERMINAL	O	

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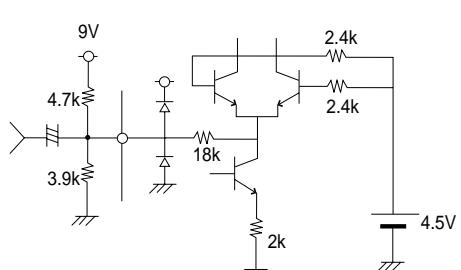
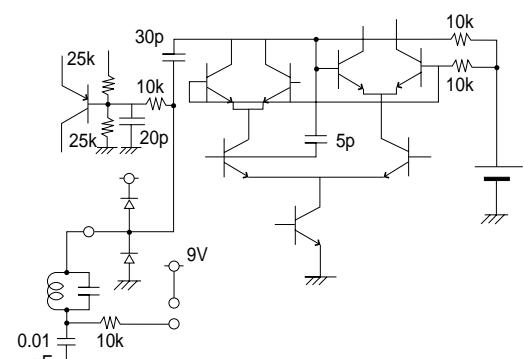
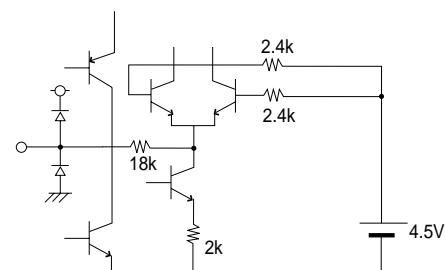
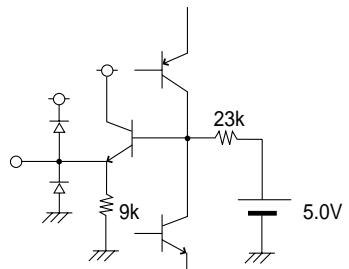
PIN NO	NO	NAME	DESCRIPTION	1/O	ACTIVE
47	P0 <sub>5</sub> /PWM1	BRIGHT	BRIGHT PWM OUTPUT TERMINAL	I	
48	P0 <sub>4</sub> /PWM0	CONTRAST	CONTRAST PWM OUTPUT TERMINAL	O	
49	P5 <sub>5</sub> /OUT1	BLANK	BLINKING OUTPUT TERMINAL	O	
50	P5 <sub>4</sub> /B	B	B OUTPUT TERMINAL	O	
51	P5 <sub>3</sub> /G	G	G OUTPUT TERMINAL	I	
52	P5 <sub>2</sub> /R	R	R OUTPUT TERMINAL	O	

## ■ I501 (CHROMA IC : M52335SP - 600)

### 1. Pin Layout



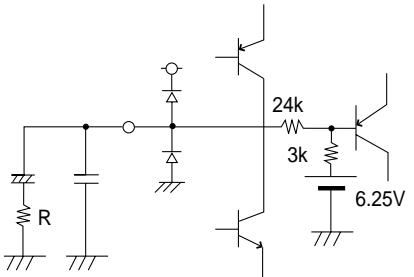
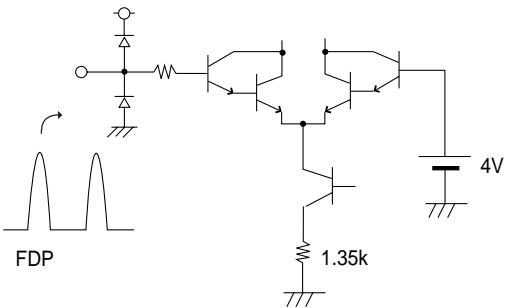
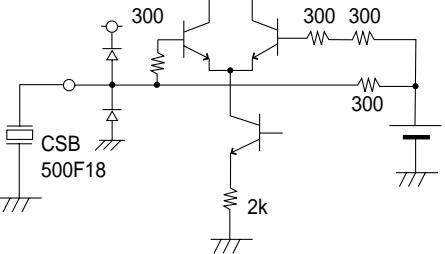
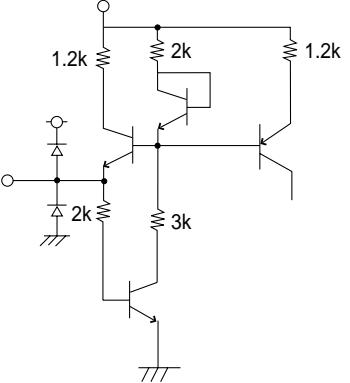
## 2. DESCRIPTION OF PINS

Pin No.	Function	Voltage and wave Information	Peripheral circuitry	Circuit description
1	EXT AUDIO IN	3.25V		The Input impedance is $18\text{k}\Omega$ . Add bias to the outside as shown right for use.
2	SOUND DET COIL	2.5V		The EM detector is a quadrature detector and externally connects to a tank coil or discriminator. This is also used as an AV switching pin to apply voltage through a $10\text{k}\Omega$ . GND to EXT(Y-DL) OPEN to TV(Y-DL) Vcc(5V) to TV(S input)
3	SOUND DET OUT	3.75V (Varies with coil position)		Sound detector output pin. for de-emphasis, connect a capacitor between this pin and GND.
4	AF OUT	4.2V		Sound output pin through ATT.

## DESCRIPTION OF PINS (cont.)

Pin No.	Function	Voltage and wave Information	Peripheral circuitry	Circuit description
5	IF AGC FILTER	4.4 to 1.5V		<p>Dynamic AGC circuit is used to improve AGC response characteristics.  Set a filter constant to avoid a sag around 70dB<math>\mu</math>.</p> <p>IF AGC Voltage 4.4V</p> <p>50dB<math>\mu</math> 70dB<math>\mu</math> 100dB<math>\mu</math> IF Input</p>
6	RF AGC DELAY ADJ.	—		RFAGC delay point is set by the voltage applied to this pin.
7	GND-1 (YIF SIF)	—	—	—
8 9	VIF IN	1.5V		<p>Input resistance is 1k<math>\Omega</math>.  Input capacitance is 7pF.</p>
10	Vcc-1 (VIF SIF)	5V	—	—
11	APC FILTER	3V		<p>The f characteristic of a loop in the locked state can be set by R.  Normally set to in the range of 100 to 150kHz.</p> <p>11 pin Output</p> <p>fc frequency</p> <p>V11</p> <p>fo</p> <p>IF frequency</p>

## DESCRIPTION OF PINS (cont.)

Pin No.	Function	Voltage and wave Information	Peripheral circuitry	Circuit description
12	H. Vcc	—	—	Power supply pin for horizontal and vertical systems. its current is about 34mA.
13	AFC FILTER	6.25V		Increasing R provides a faster AFC response to minimize picture skewing in the VCR mode. However this will increase horizontal jitter in weak signal areas
14	AFC FSP IN	—	 <p>FDP</p>	Flyback pulse is limited to 4V, to generate the AFC 2 detector pulse. Peaks around 4V causes jitter; also the picture is displaced to the right due to the integration of the flyback pulse.
15	32H OSC	3.8V		CSB500F18 is used.
16	X-RAY PROTECT	—		Applying voltage of 0.7V or more operates the X-ray protector. connect to GND if not using the pin.

## DESCRIPTION OF PINS (cont.)

Pin No.	Function	Voltage and wave Information	Peripheral circuitry	Circuit description
17	COINCIDENCE OUT	8V(Synchronous) to 0V(Asynchronous)		Voltage goes up if a sync signal is entered and horizontal AFC is locked; otherwise, the voltage goes down. therefore, the pin can be also used as a MUTE detector. At that time, pay attention to high impedance.
18	V.OUT	—		Pulse as shown below is output.
19	Vcc-2(VCJ)	9V	—	Power supply for VC, AFT, RF AGC and SIF DET.
20	H.OUT	—		Horizontal pulse of 24 $\mu$ s wide is output. It is open emitter output.  
21	COLOR CONT.	4.5V		Color control pin. Its voltage goes to 0V when service SW is ON.

## DESCRIPTION OF PINS (cont.)

Pin No.	Function	Voltage and wave Information	Peripheral Circuitry	Circuit description
20	Y. OUT	—		Video output pin. The flyback pulse is required to trigger an internal blanking pulse, which also blanks chroma signal.
23 24 25	R-Y OUT G-Y OUT B-Y OUT	5.4V		Open emitter output with maximum current of about 5mA.
26 27 28	OSD B OSD G OSD R	—		Input impedance is 50kΩ. Input voltage must exceed 2.5V, to insert a character signal.
29	TINT CONT.	4.5V		Tint control pin.

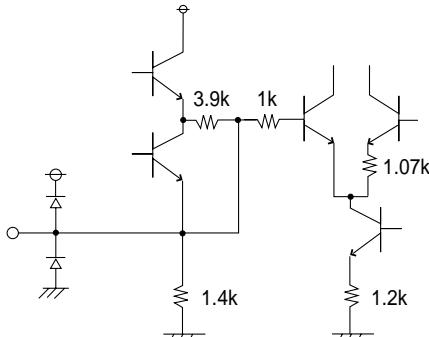
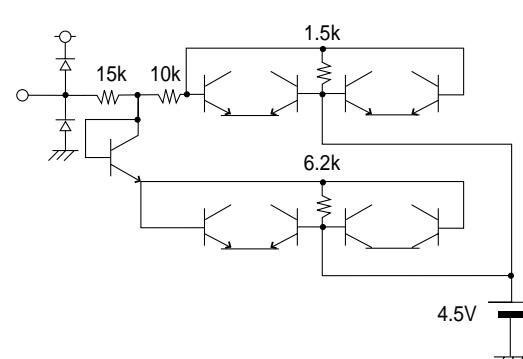
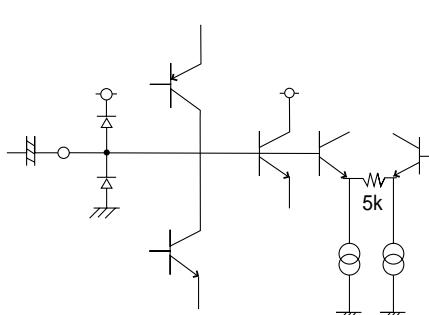
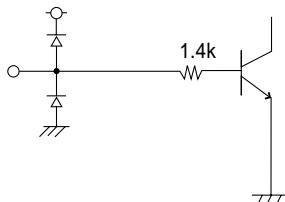
## DESCRIPTION OF PINS (cont.)

Pin No.	Function	Voltage and wave Information	Peripheral circuitry	Circuit description
30	FAST BLK IN	—		Applying voltage of 2.5V or more causes blanking
31	APC FILTER	6.5V		Cap character is changed by R. As R is decreased, the cap character becomes narrower, but phase, jittering is reduced.
32	CHROMA OSC	6.8V		Use XTAL of the series capacitance type.
33	ACC FILTER	—		As R is decreased, chroma output increases but ACC is not activated smoothly.

## DESCRIPTION OF PINS (cont.)

Pin No.	Function	Voltage and wave Information	Peripheral circuitry	Circuit description
34	BLACK HOLD	About 3.2V		Pin used for holding the most dark parts of a video signal. The black peaks are averaged out by this circuitry. As R increases more of the blacks are held.
35	KILLER FILTER	7.6V with signal input		To decrease killer sensitivity, connect a high M resistor between the pin and GND.
36	CONTRAST	Normally 4.8V Applied externally		Can be controlled by 5.1V center
37	GND-2 (VCD)	—	—	—
38	CHROMA IN/ BRIGHTNESS	4.5V		Chroma signal standard. Chroma signal level is 200mVp-p. This pin is also used as a brightness control pin. DC reproduction ratio is 100%.

## DESCRIPTION OF PINS (cont.)

Pin No.	Function	Voltage and wave Information	Peripheral circuitry	Circuit description
39	PEDESTAL CLAMP	About 2.2V		Used to connect the hold capacitor.
40	VIDEO TONE CONT.	4.5V		Sharpness control pin. By increasing the voltage at this pin; the picture becomes softer.
41	Y IN	3.3V		Video level at this pin is 0.5V P-P. Input level must be kept low to avoid the pedestal clamp. Typical coupling capacitor of 0.1uF is used.
42	EXT VIDEO IN	—		Video input level is 1Vp-p.

## DESCRIPTION OF PINS (cont.)

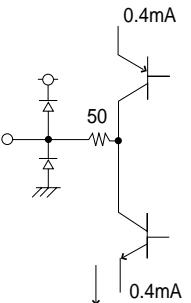
Pin No.	Function	Voltage and wave Information	Peripheral circuitry	Circuit description
43	Y SW OUT	2.5V		Output signal level is 1.5Vp-p.
44	SYNC IN.	6.6V		Sync separation is of the emitter input type. Vertical sync separation is done inside the 1C.
45	TV IN	2.5V		Signal level is 1V p-p
46 47	VCO COIL	4V		Reference tuning capacitance is 27pF. As the capacitance is decreased, the variable range becomes wider but stability becomes worse.

## DESCRIPTION OF PINS (cont.)

Pin No.	Function	Voltage and wave Information	Peripheral circuitry	Circuit description
48	SIF IN/ATT	4.5V		Volume control pin.
49	AFT DEFECT	—		A voltage above 2.5V, defeats the AFT.
50	AFT OUT	8.2 to 0.5V		Current output type. As load resistor R is increased, detector sensitivity becomes higher but output becomes larger.
51	VIDEO OUT	—		The sync tip level is between 1.4V and 1.75V p-p

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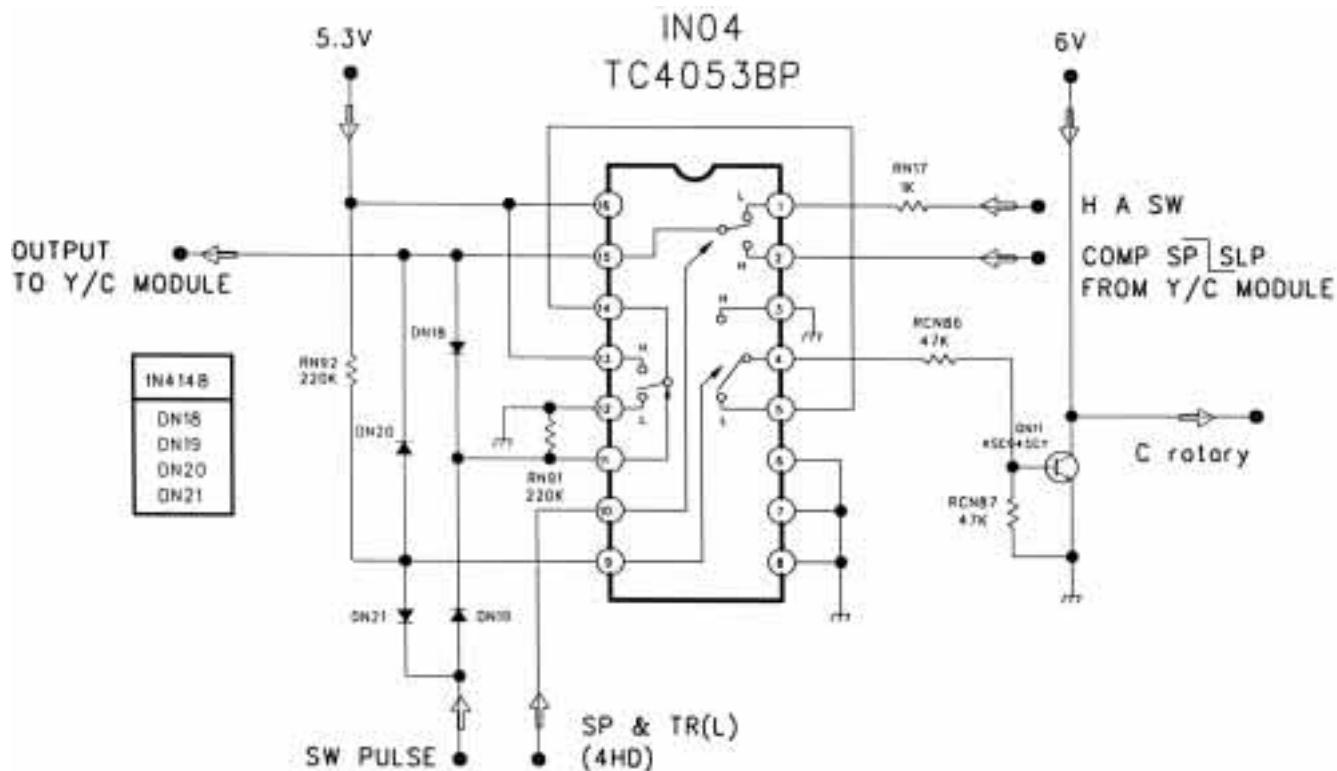
### DESCRIPTION OF PINS (cont.)

Pin No.	Function	Voltage and wave Information	Peripheral circuitry	Circuit description
52	RF AGC OUT	—		Max. current output is 0.4mA.

## ■ IN04(TC4053BP)

1. Function : Triple 2 Channel Analog Multiplexer/Demultiplexer.

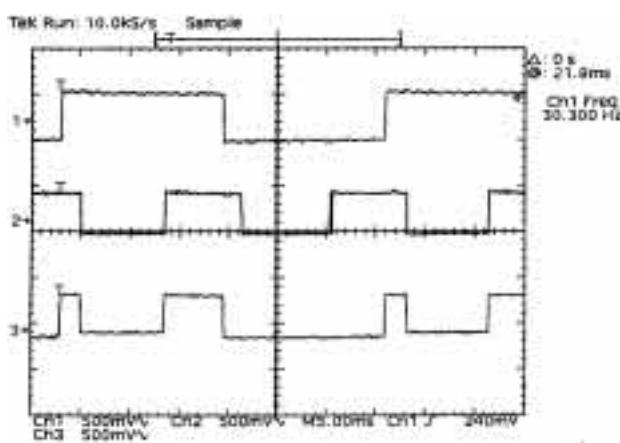
2. Signal Input & Output Diagram



### 3. Operation Summary

This IC operates in case of Slow, Still, Que and Review in 4HD.

To obtain exact signal waveform, various signals are input to each channel following are each controlled signal logics.



1) Que

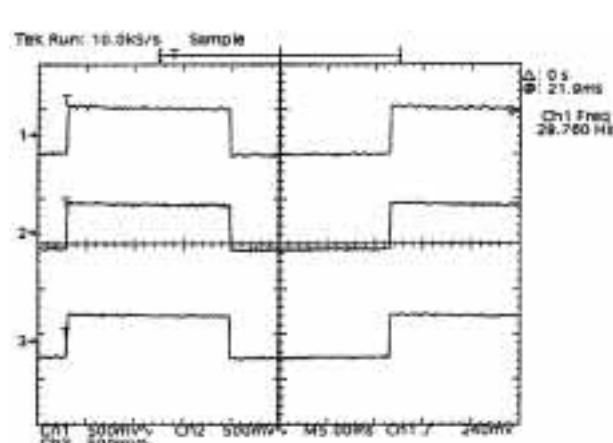
Ch1 : SW PULSE

Ch2 : pin 15

Ch3 : pin 9

\* Logic AND function

CH3 = CH1 · CH2



2) STILL

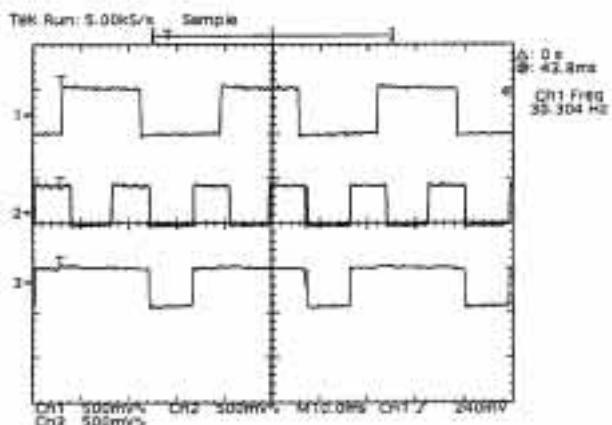
Ch1 : SW PULSE

Ch2 : pin 15

Ch3 : pin 9

\* Logic AND function

CH3 = CH1 · CH2



3) Que

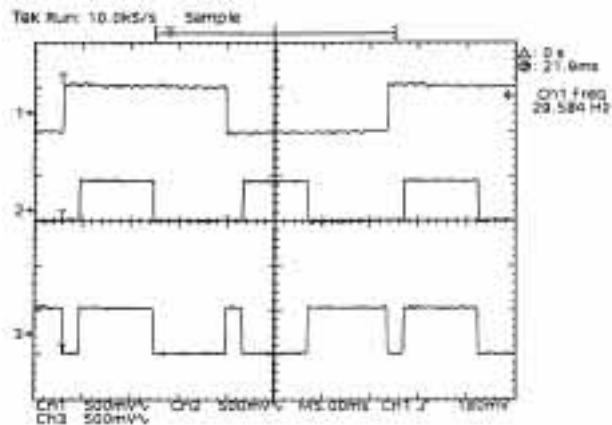
Ch1 : SW PULSE

Ch2 : pin 15

\* Logic OR function

Ch3 : pin 11

CH3 = CH1+CH2



4) Que

Ch1 : SW PULSE

Ch2 : comp SP|SLP

\* Logic AND function

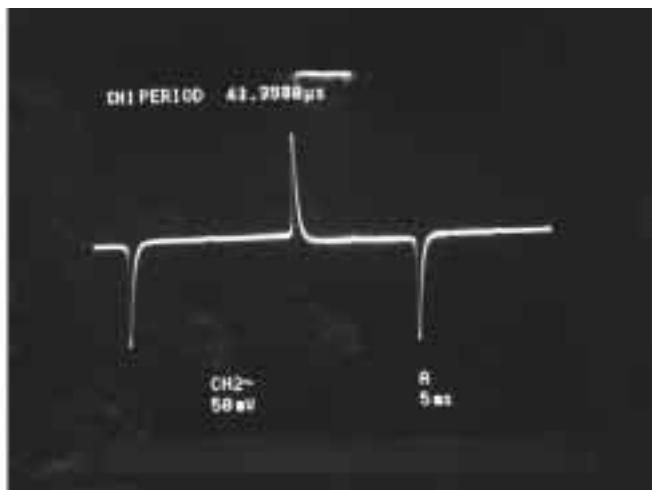
Ch3 : C Rotary

CH3 = CH1⊕CH2

# ■ IMPORTANT SIGNAL WAVEFORMS



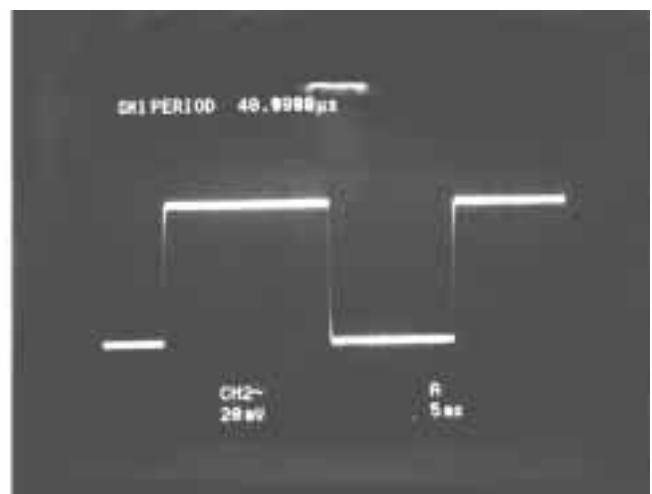
① IY01 PIN 14 (PB ENVELOPE)  
500mVp-p 34mS



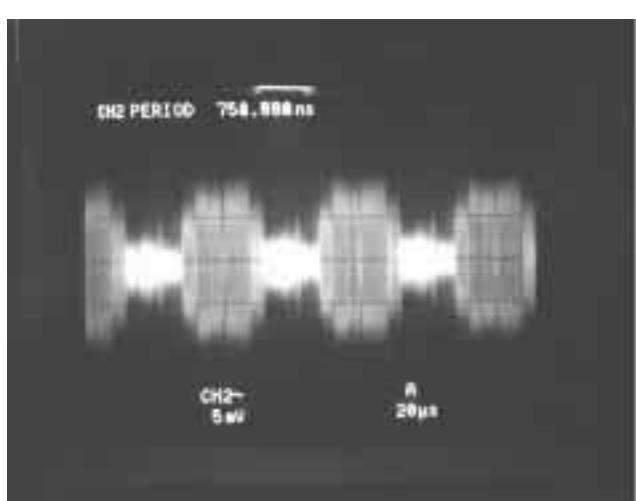
② IN03 PIN 1(CTL HEAD +)  
2.5Vp-p 34mS



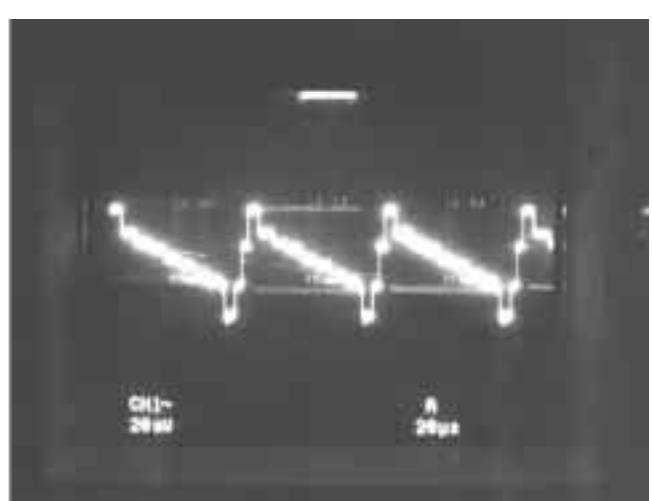
③ IY01 PIN 2 (PLAY)  
500mVp-p 63.5μS



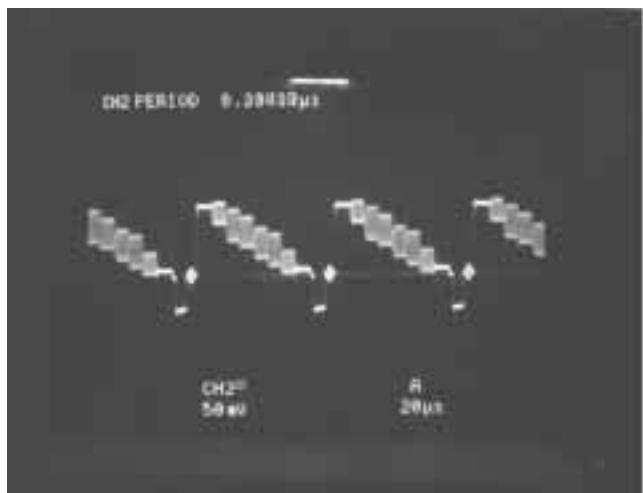
④ IN01 PIN 20 (CTL PULSE)  
5.2Vp-p 34mS



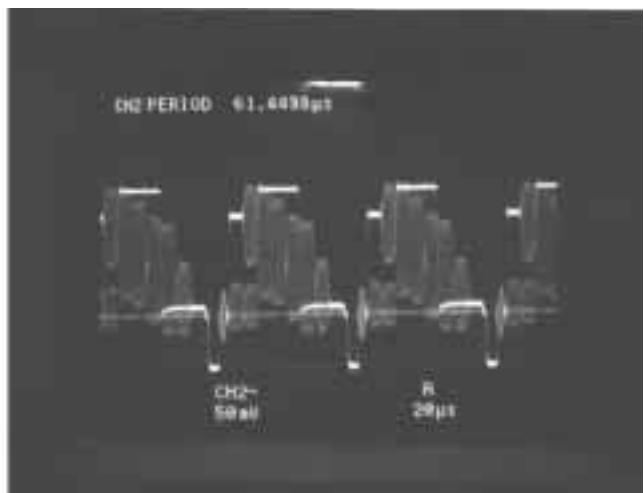
⑤ I501 PIN 38  
2.5Vp-p 63.5μS



⑥ IY01 PIN 2 (REC)  
500mVp-p 63.5μS



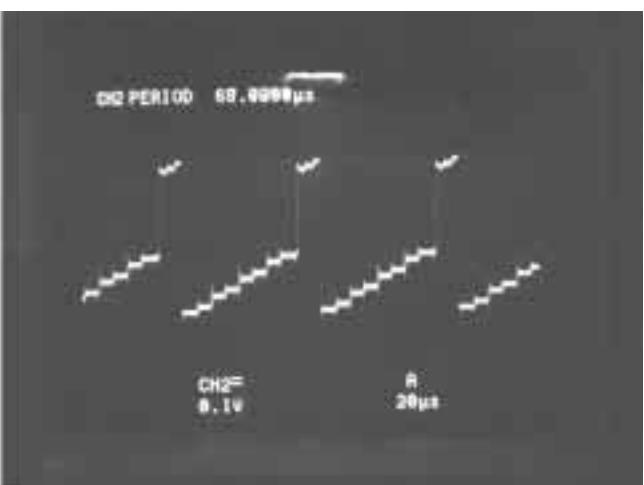
⑦ I501 PIN 43 & IY01 PIN 31 VIDEO  
2.2Vp-p 63.5μS



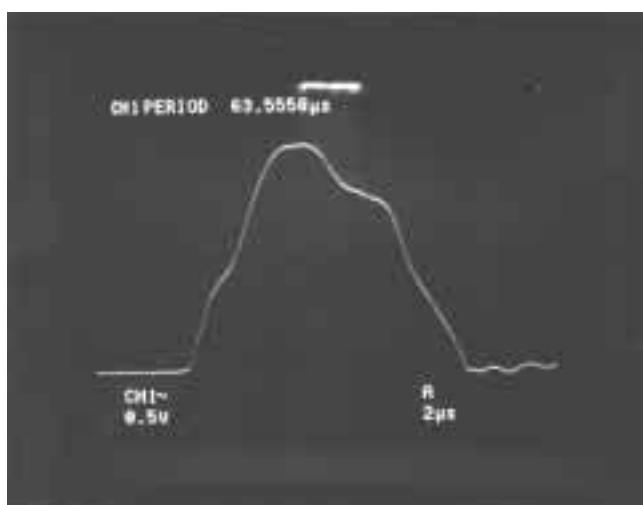
⑧ IY01 PIN 28 VIDEO OUT (PLAY)  
2.2Vp-p 63.5μS



⑨ IY01 PIN 26 (C SYNC)  
3.6Vp-p 63.5μS



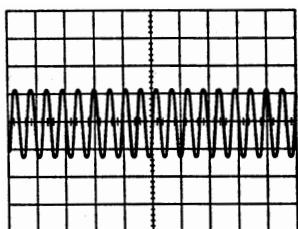
⑩ P504 PIN 4 (-Y)  
34Vp-p 63.5μS



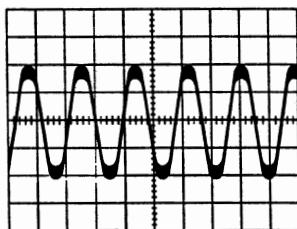
⑪ PH502 PIN 2 (HEATER PULSE)  
24Vp-p 63.5μS

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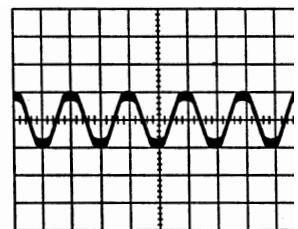
## ■ AUDIO WAVEFORMS.



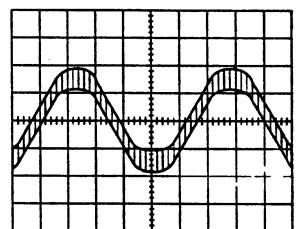
① (IU01-3) REC  
50Vp-p 14.5μS



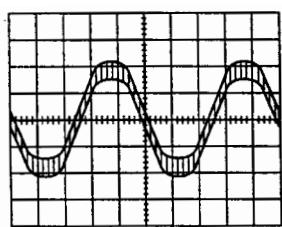
② (IU01-10) PLAY  
1.5Vp-p 10μS



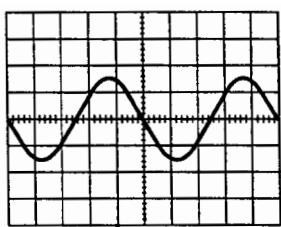
③ (IU01-12) PLAY  
0.5Vp-p 10μS



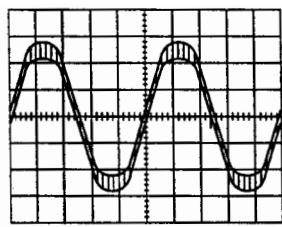
④ (IU01-16) REC  
150mVp-p 10μS



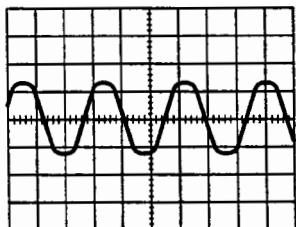
⑤ (IU01-21) REC  
1.1Vp-p 10μS



⑥ (IU01-22) REC  
1.5Vp-p 10μS



⑦ (IU01-23) REC (SP Mode)  
150mVp-p 10μS



⑧ (LU06-7) REC  
25Vp-p 14.5μS

# ■ TROUBLESHOOTING ACCORDING TO CAUSE AND SYMPTOM

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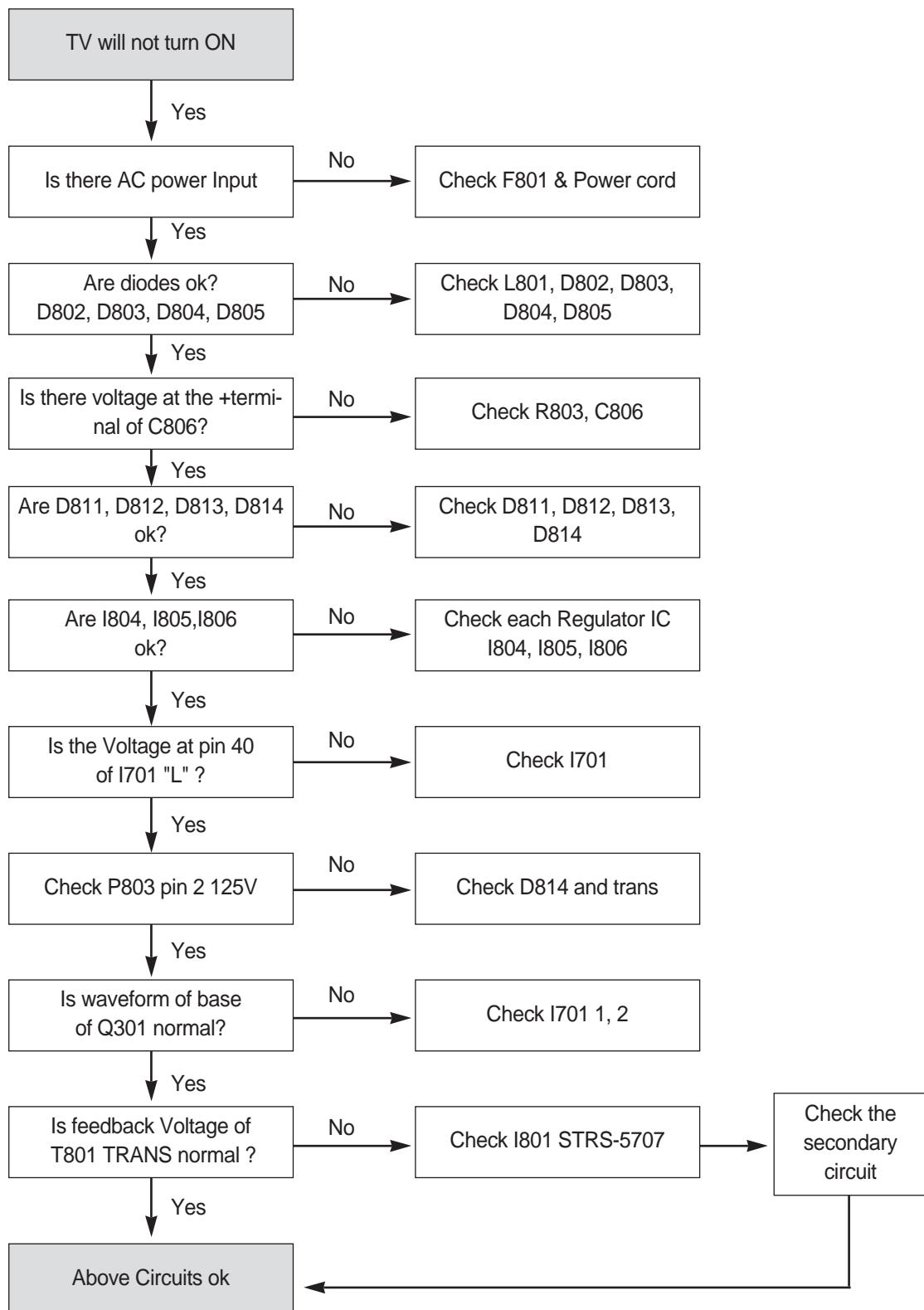
1. POWER SUPPLY UNIT
2. VERTICAL, HORIZONTAL UNIT
3. SERVO/SYSCON UNIT
4. VIDEO UNIT
5. AUDIO UNIT

– **Before Troubleshooting, Read the following.**

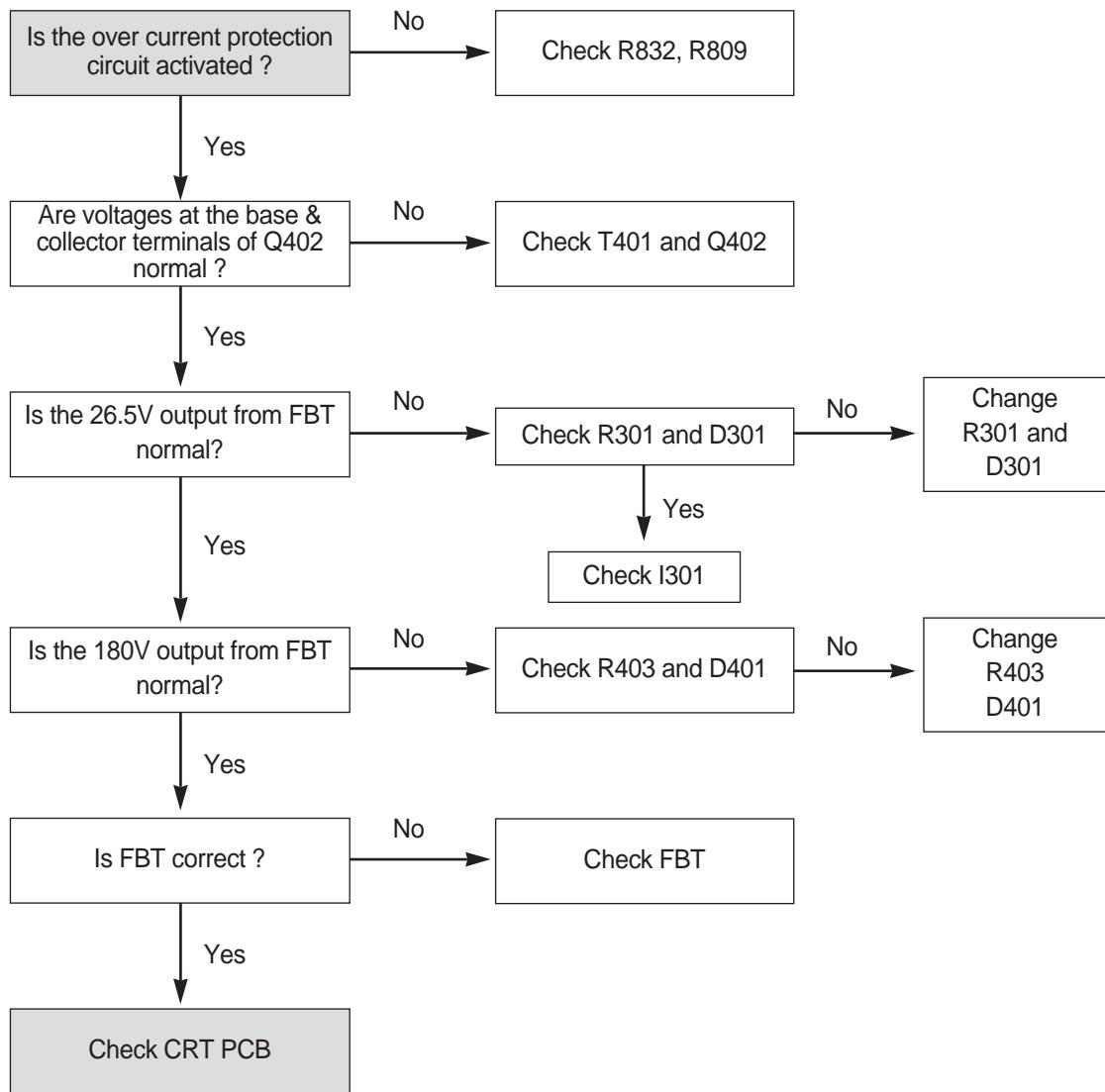
- Picture will not appear, if the following problems exist.:
  - 1) When power supply is dead.
  - 2) When horizontal output TR is dead
  - 3) When operation of overcurrent protection circuit.
  - 4) When +125V is not supplied to FBT.
- Suggestions when servicing the power supply unit.
  - 1) Before changing components, unplug the power cord. Then discharge both terminals of C806, through a high wattage resistor measuring in the k ohm region.
  - 2) When servicing this unit, it is recommended that an isolation transformer be used. This will protect personnel and test equipment from a potential shock hazard.
  - 3) Whenever the fuse blows, measure the resistance of the cement type power resistors.
  - 4) Check solder connections on components mounted on heat sinks and other parts after completing services.

## 1. Power supply unit

A.

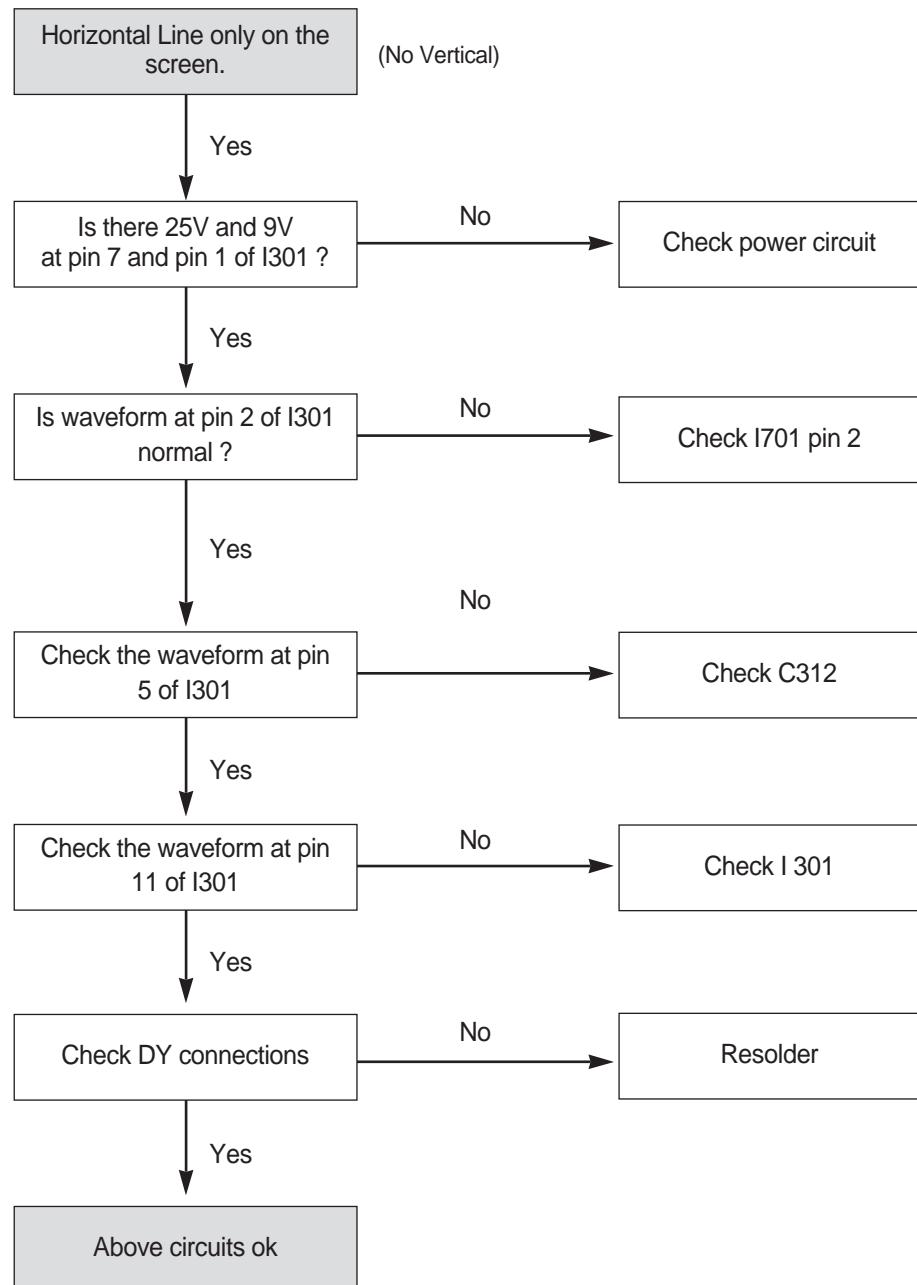


**– Check 125V unit(Deflection PCB)**

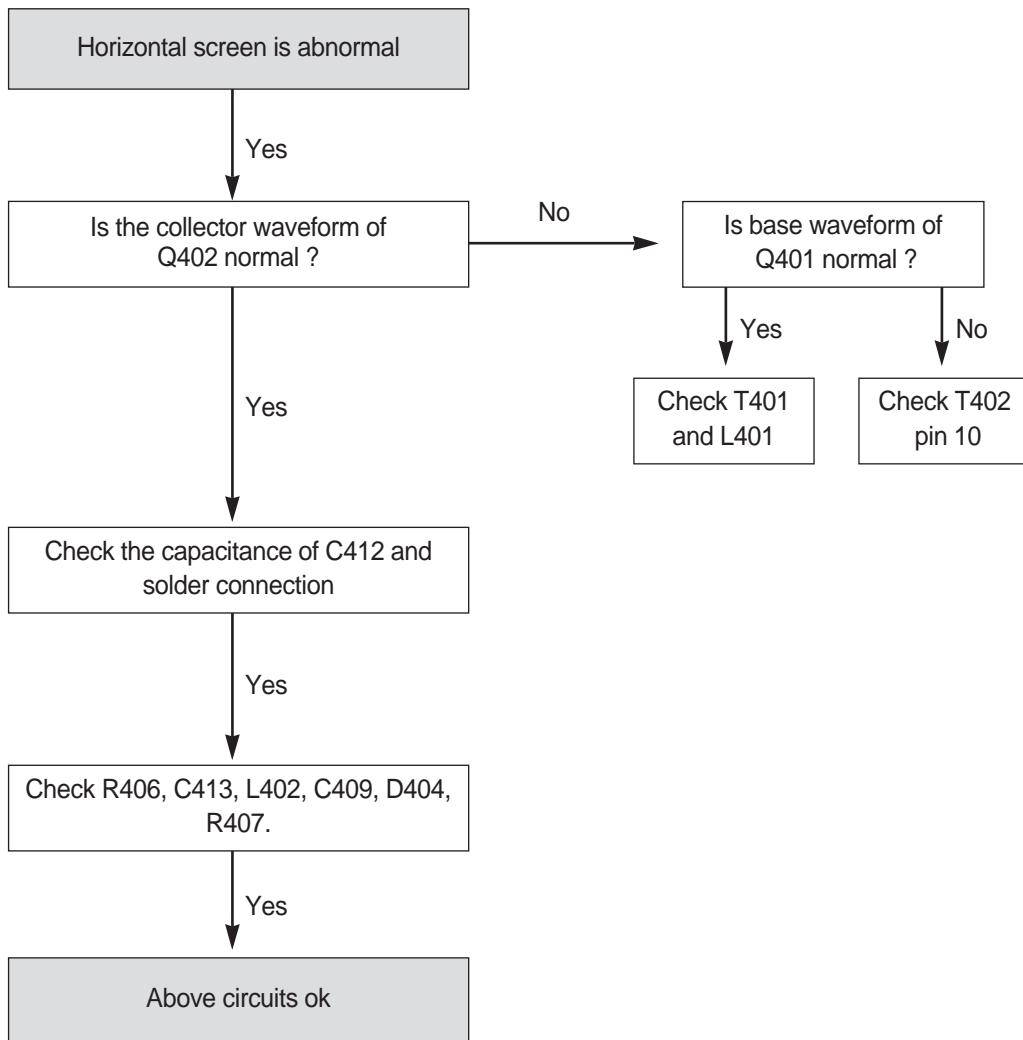


## 2. VERTICAL, HORIZONTAL UNIT.

A.

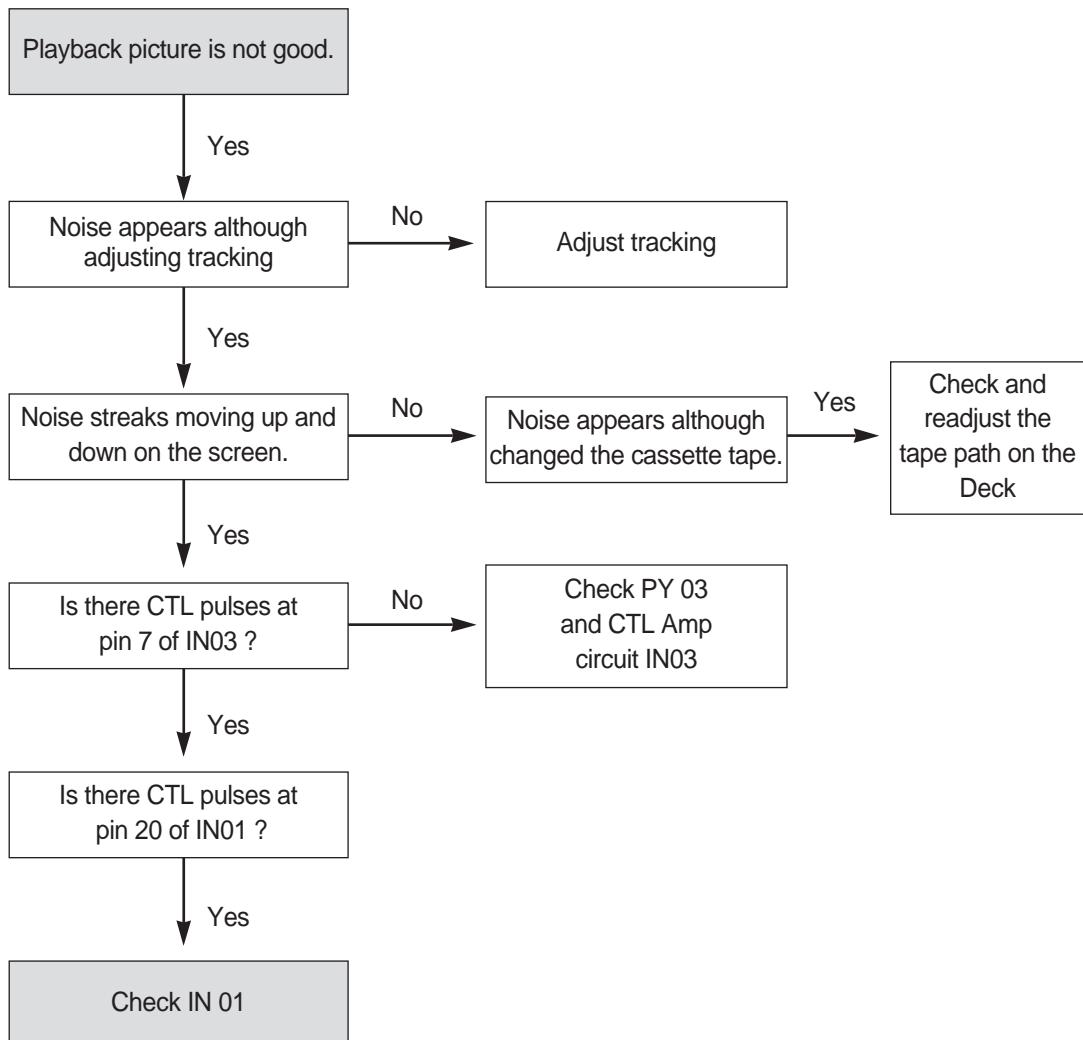


**B.**

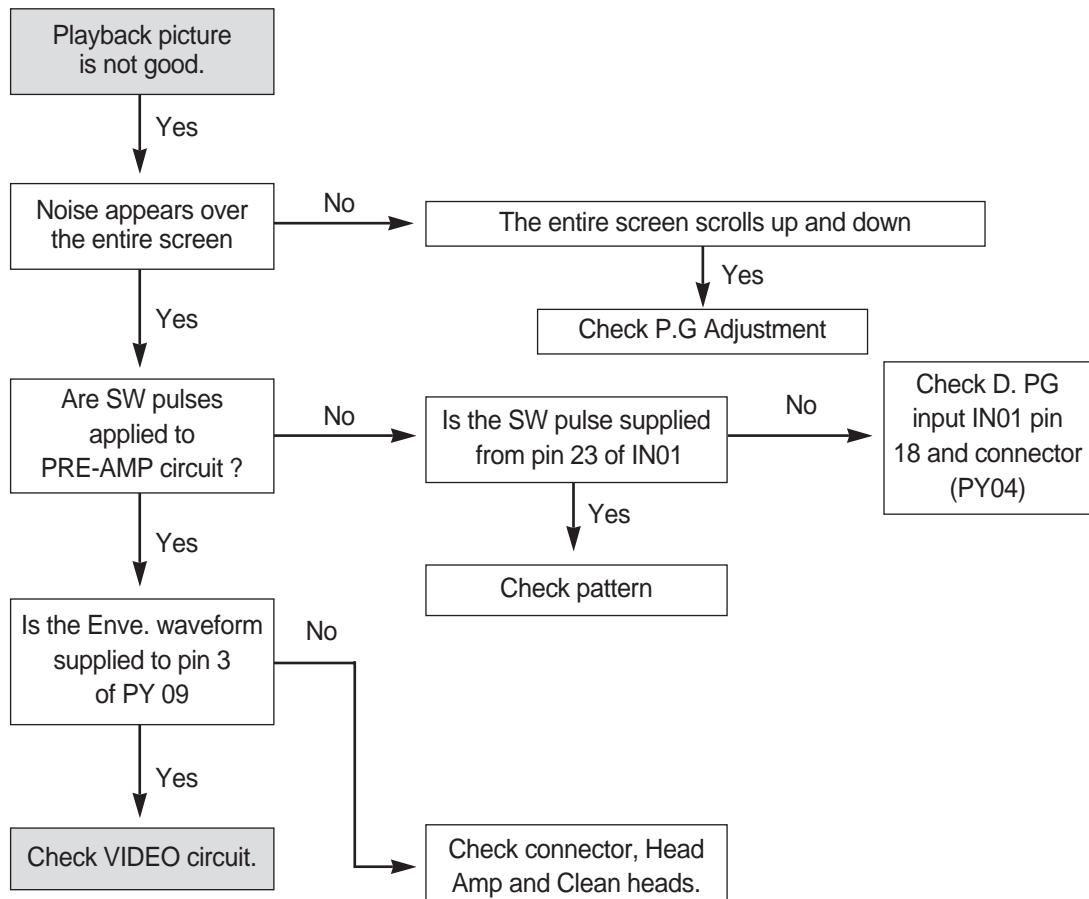


### 3. SERVO/SYSCON UNIT

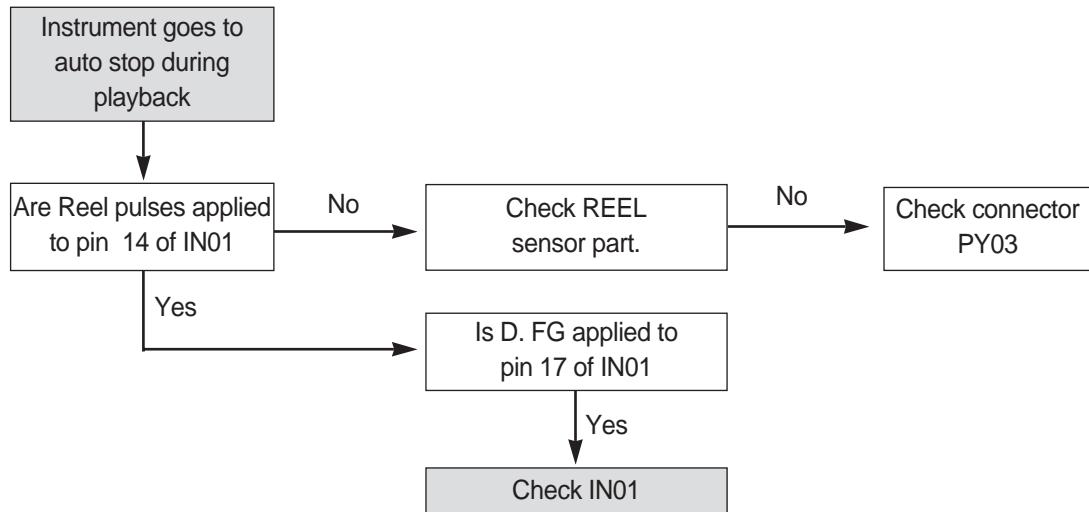
A.



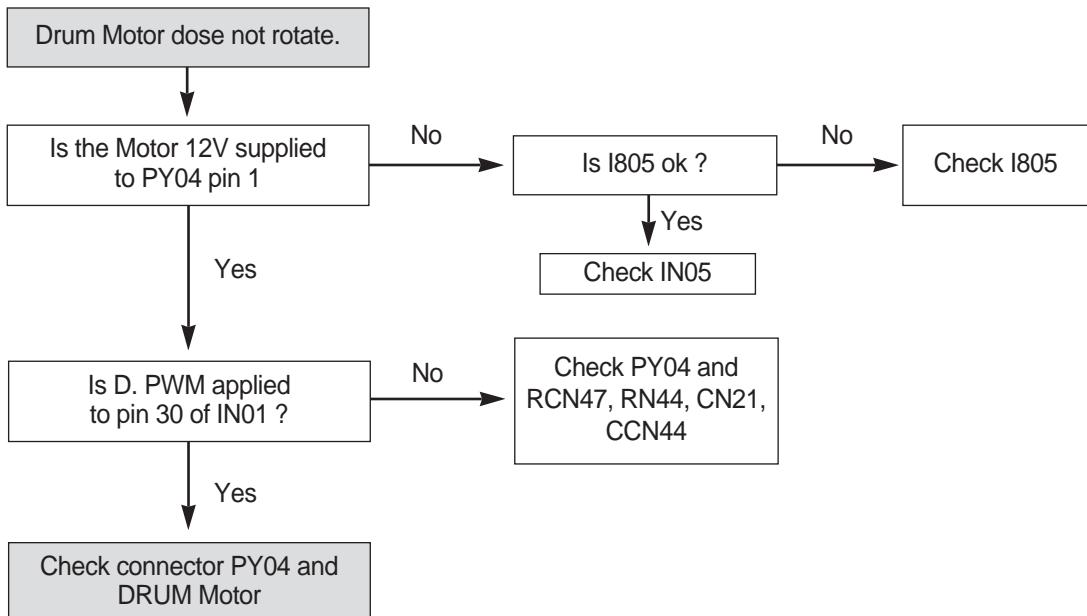
B.



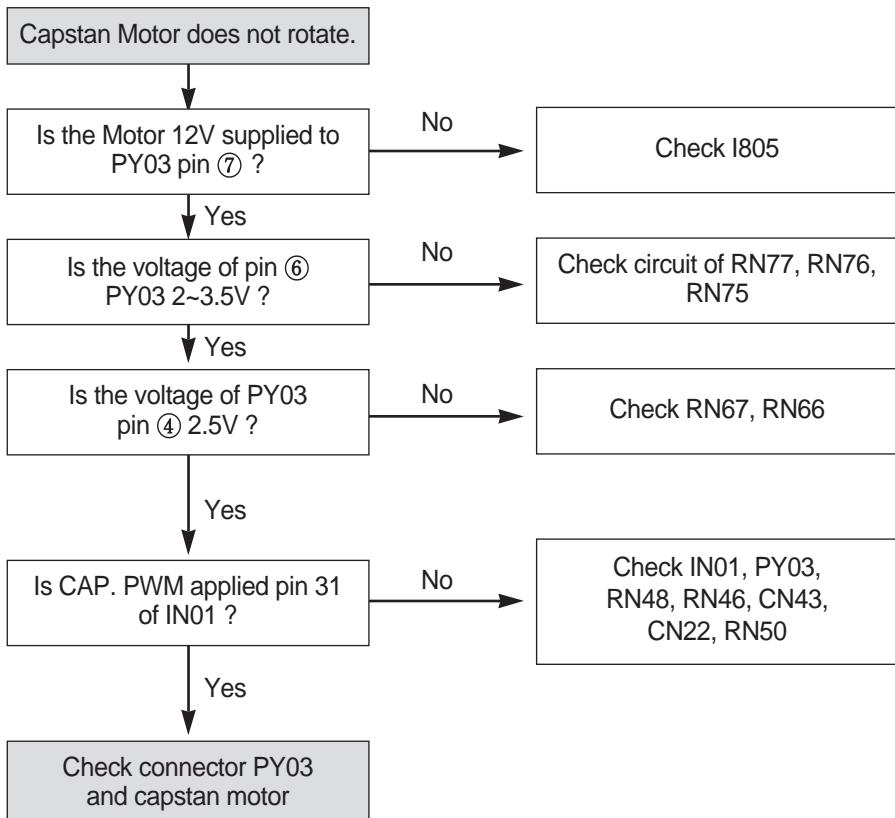
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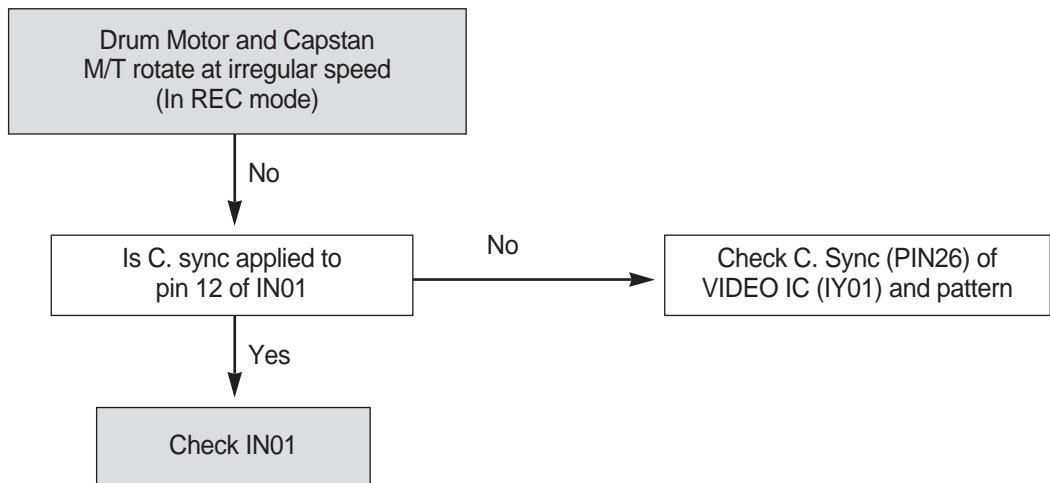
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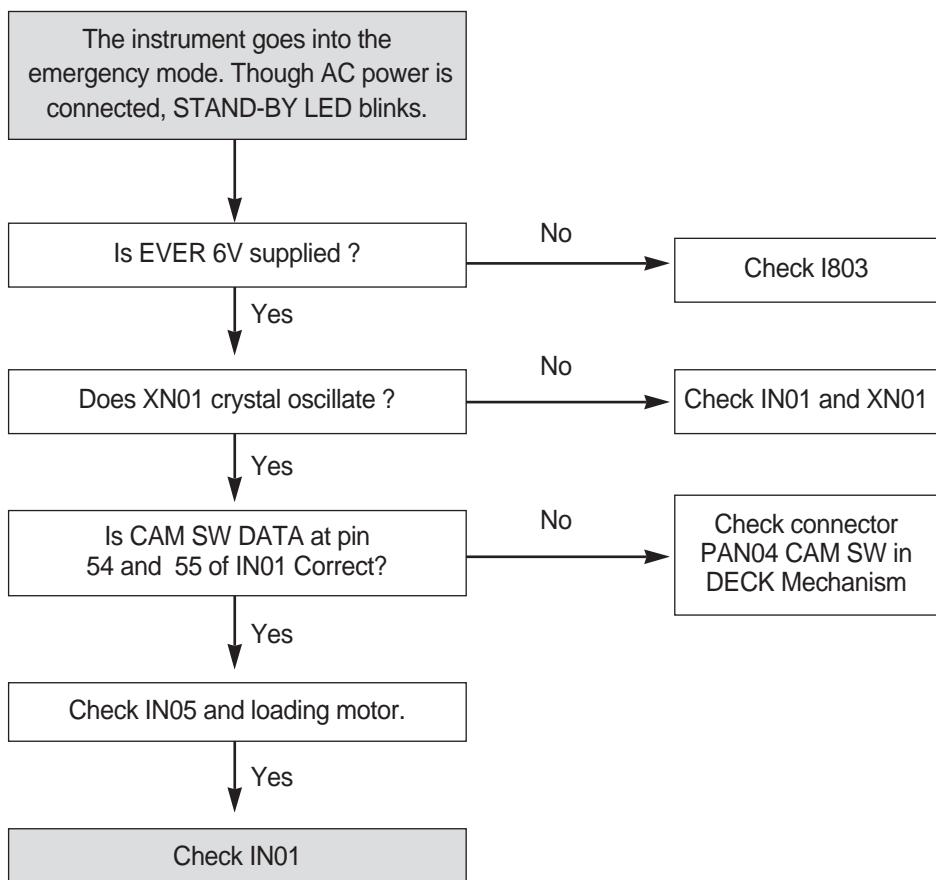
E.



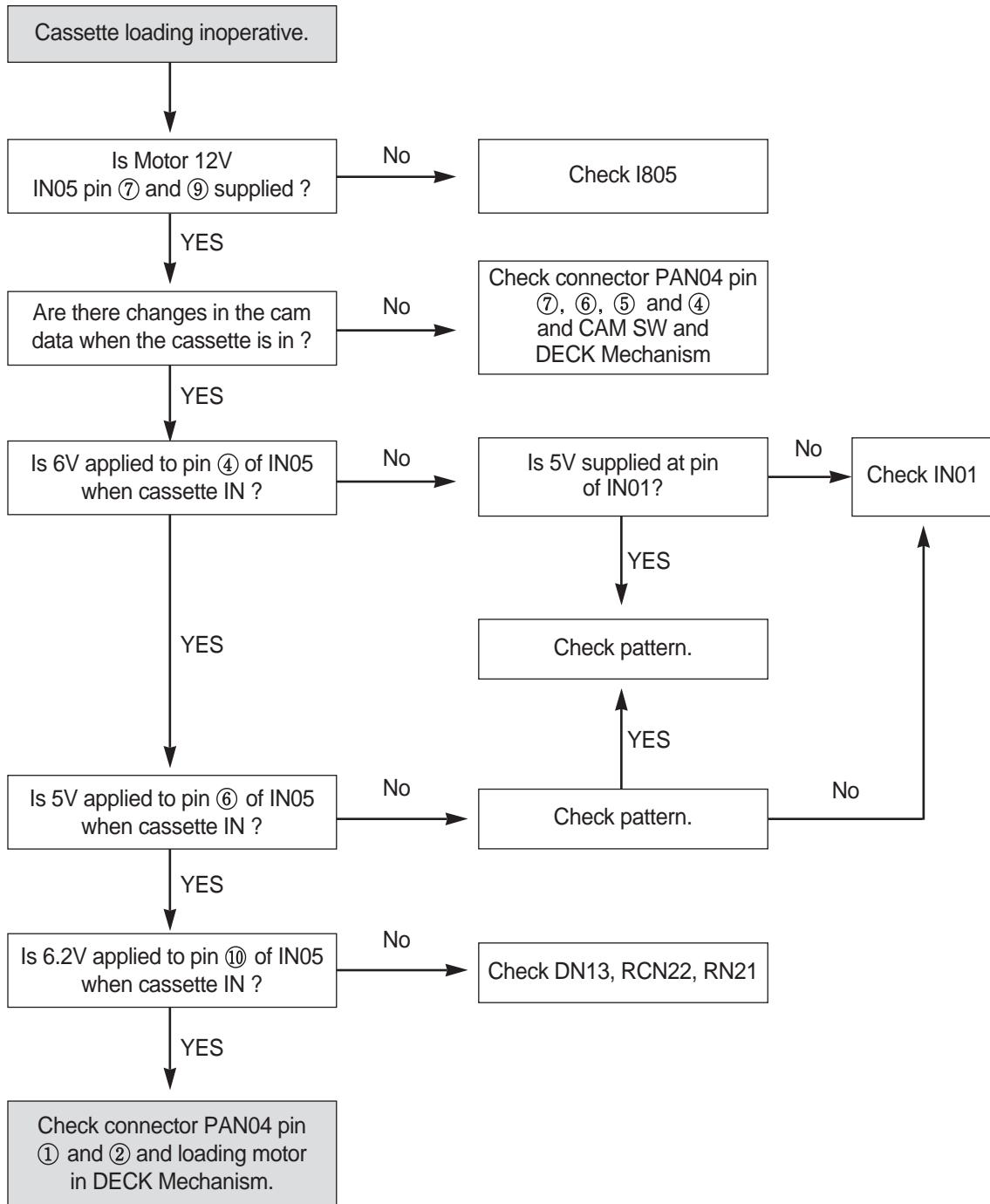
F.



G.

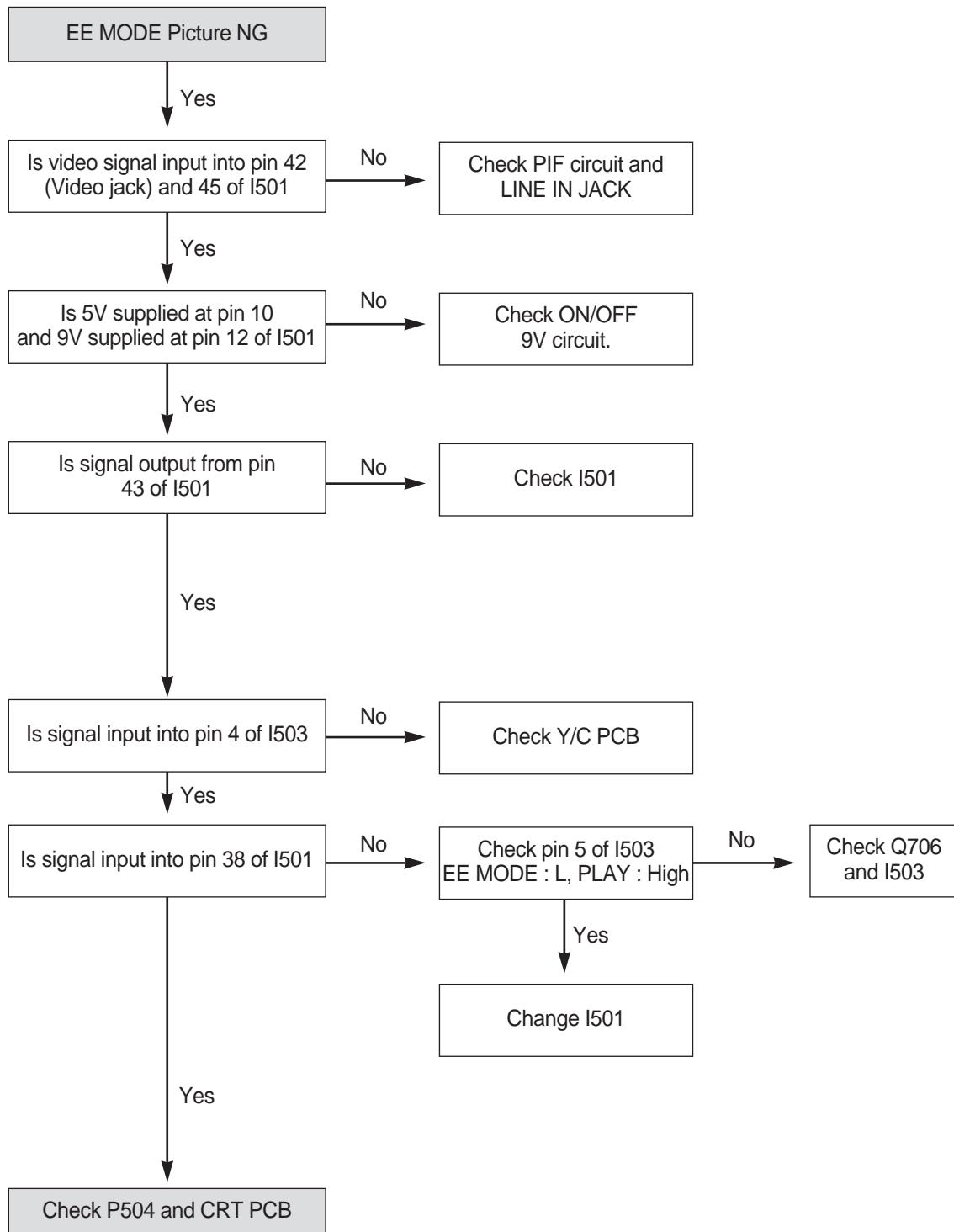


H.

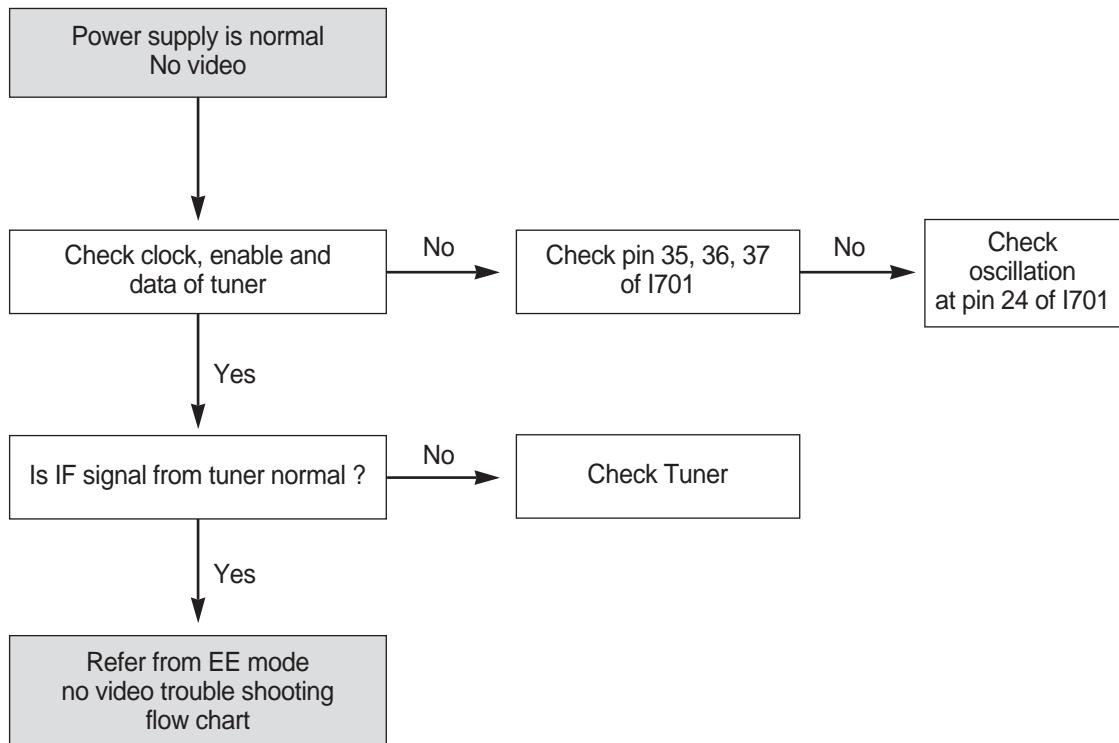


## 4. VIDEO UNIT

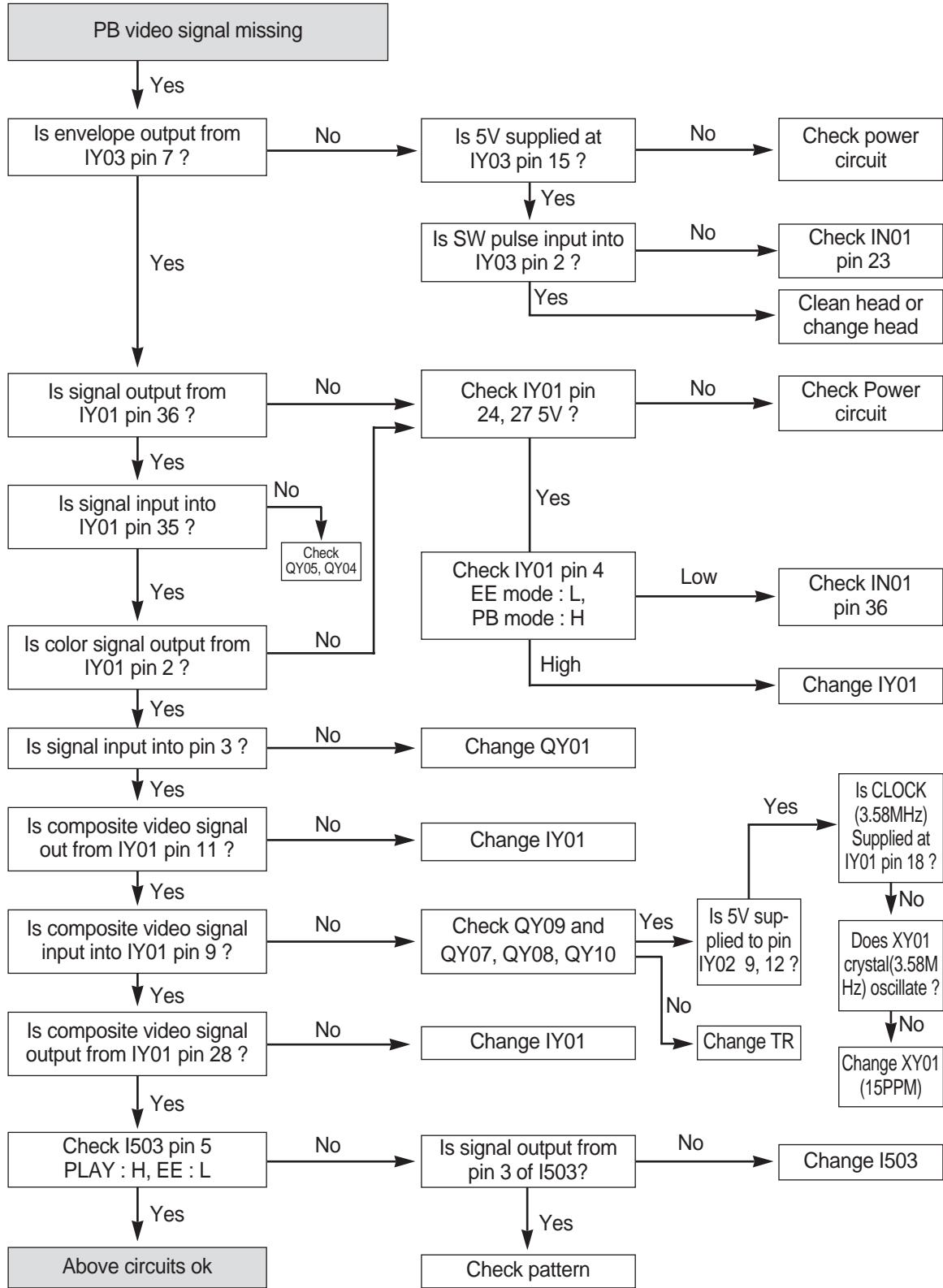
A.



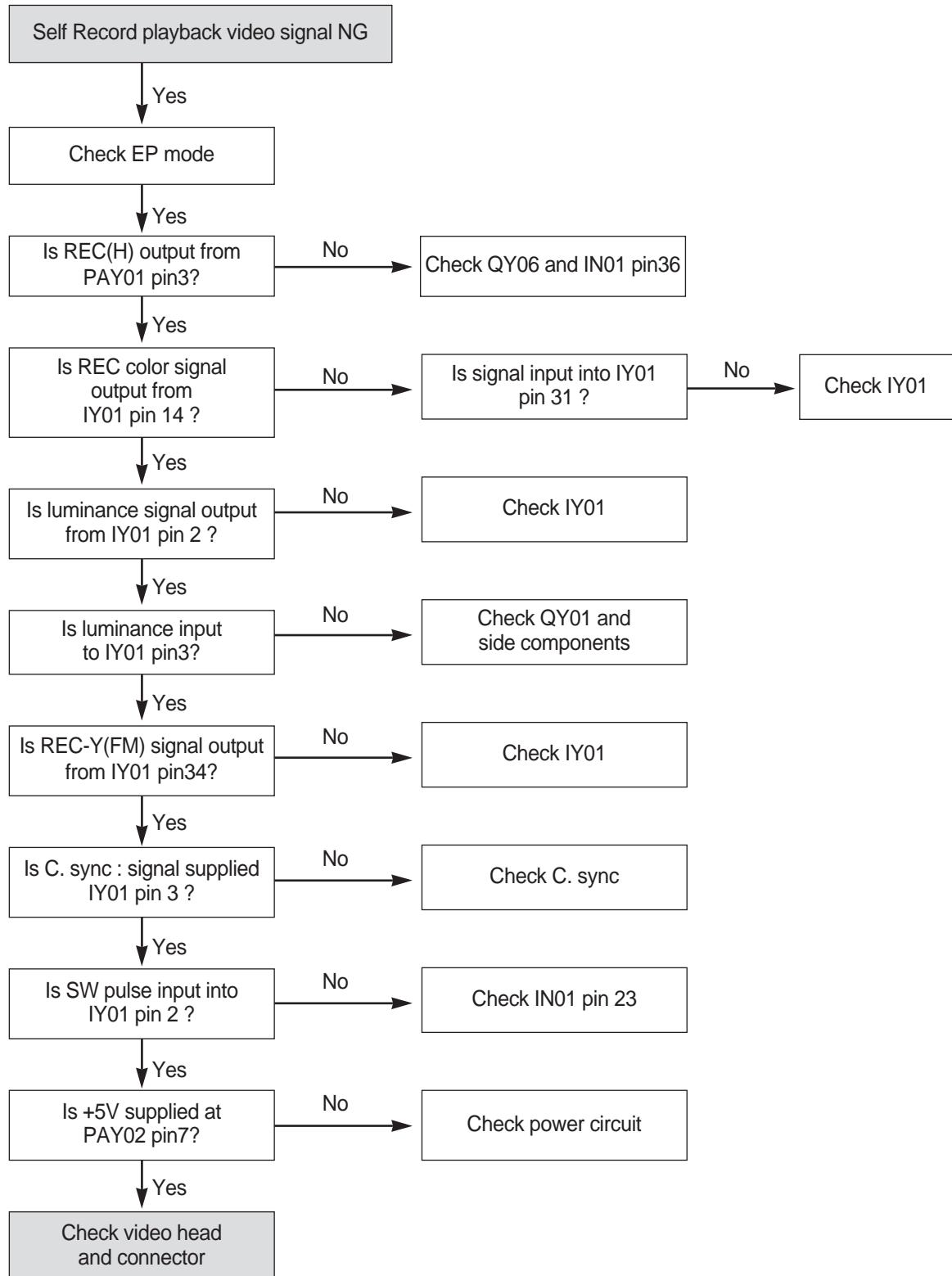
B.



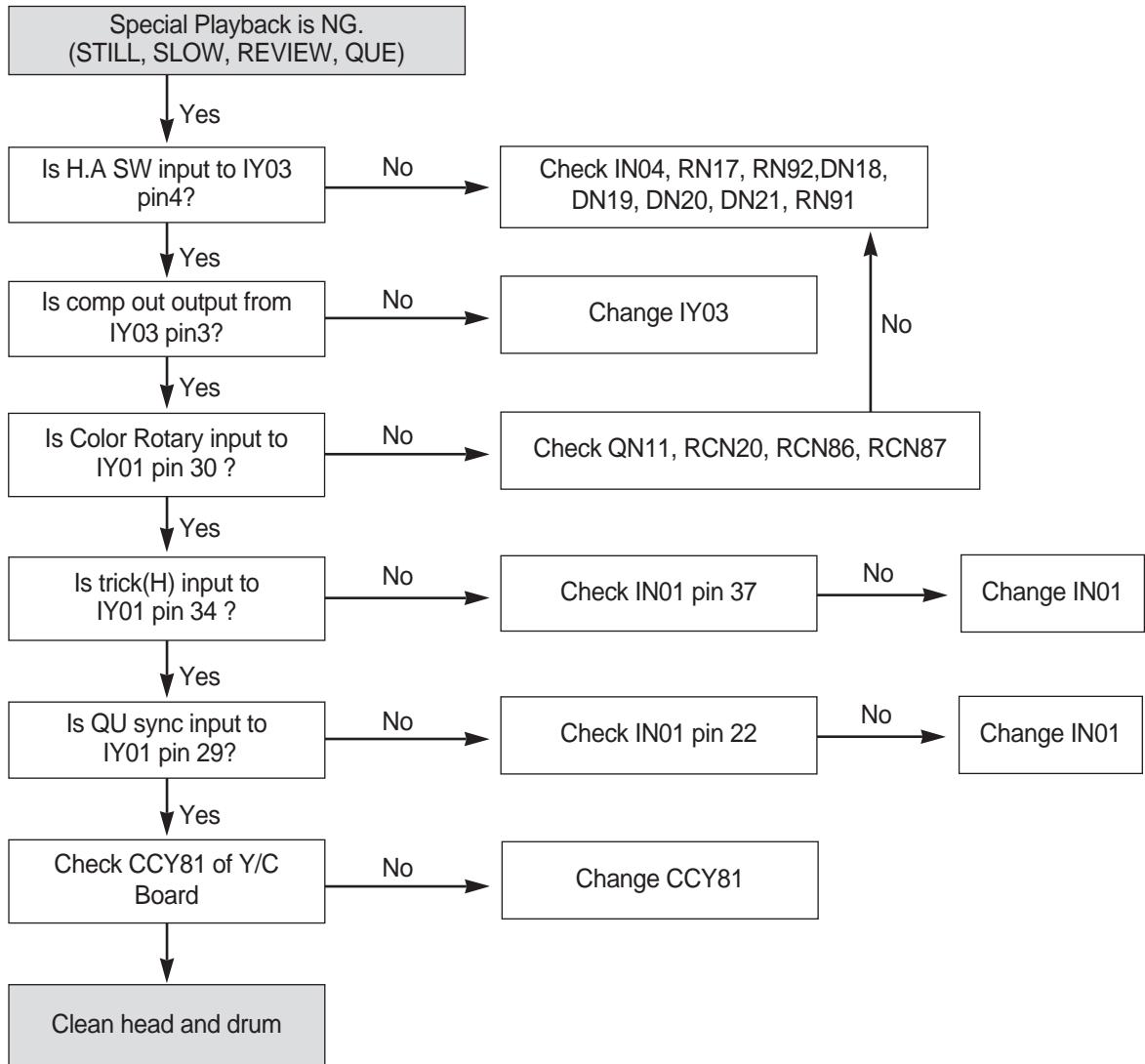
C.



D.

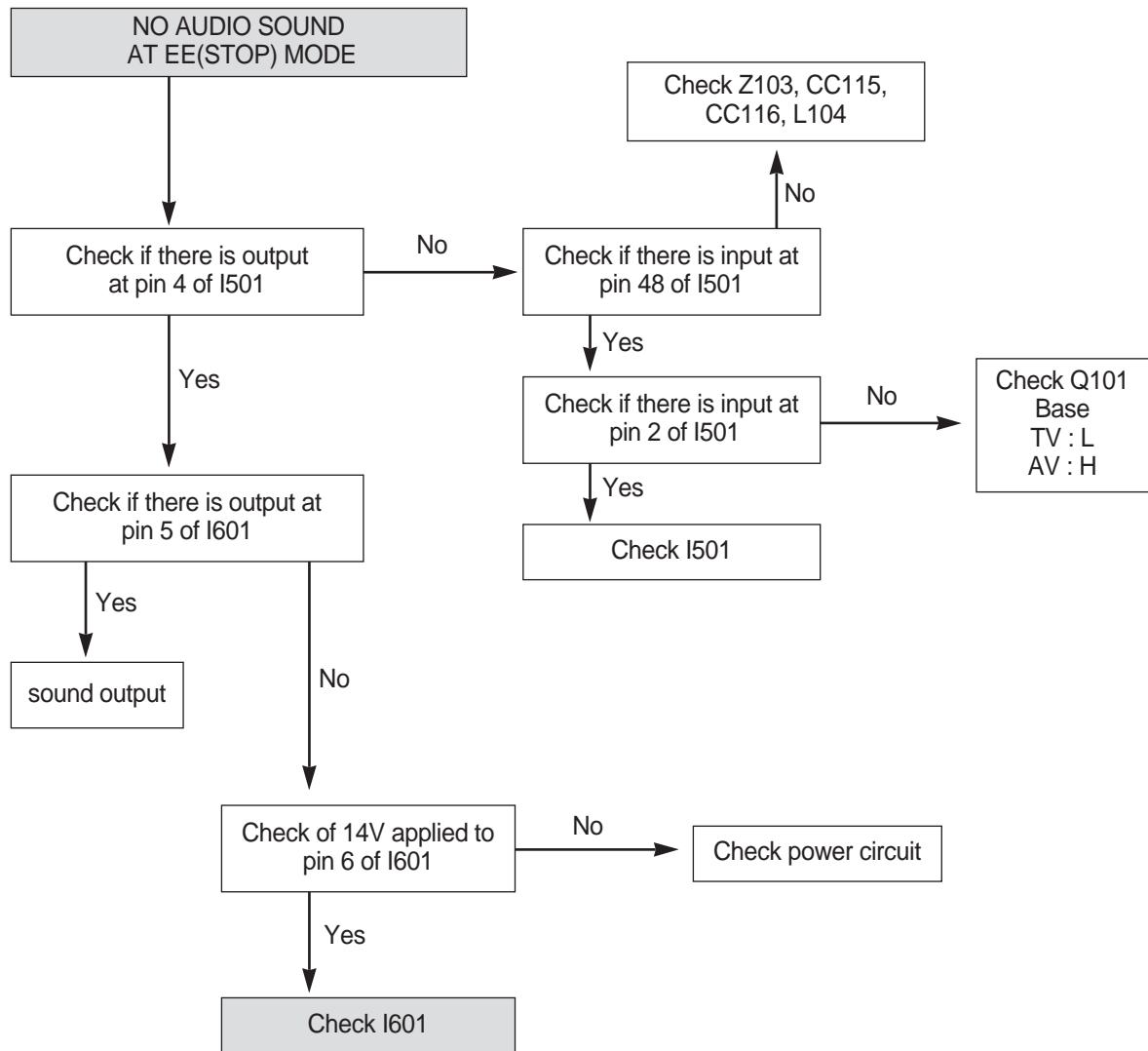


**E. TVZ1341 only**

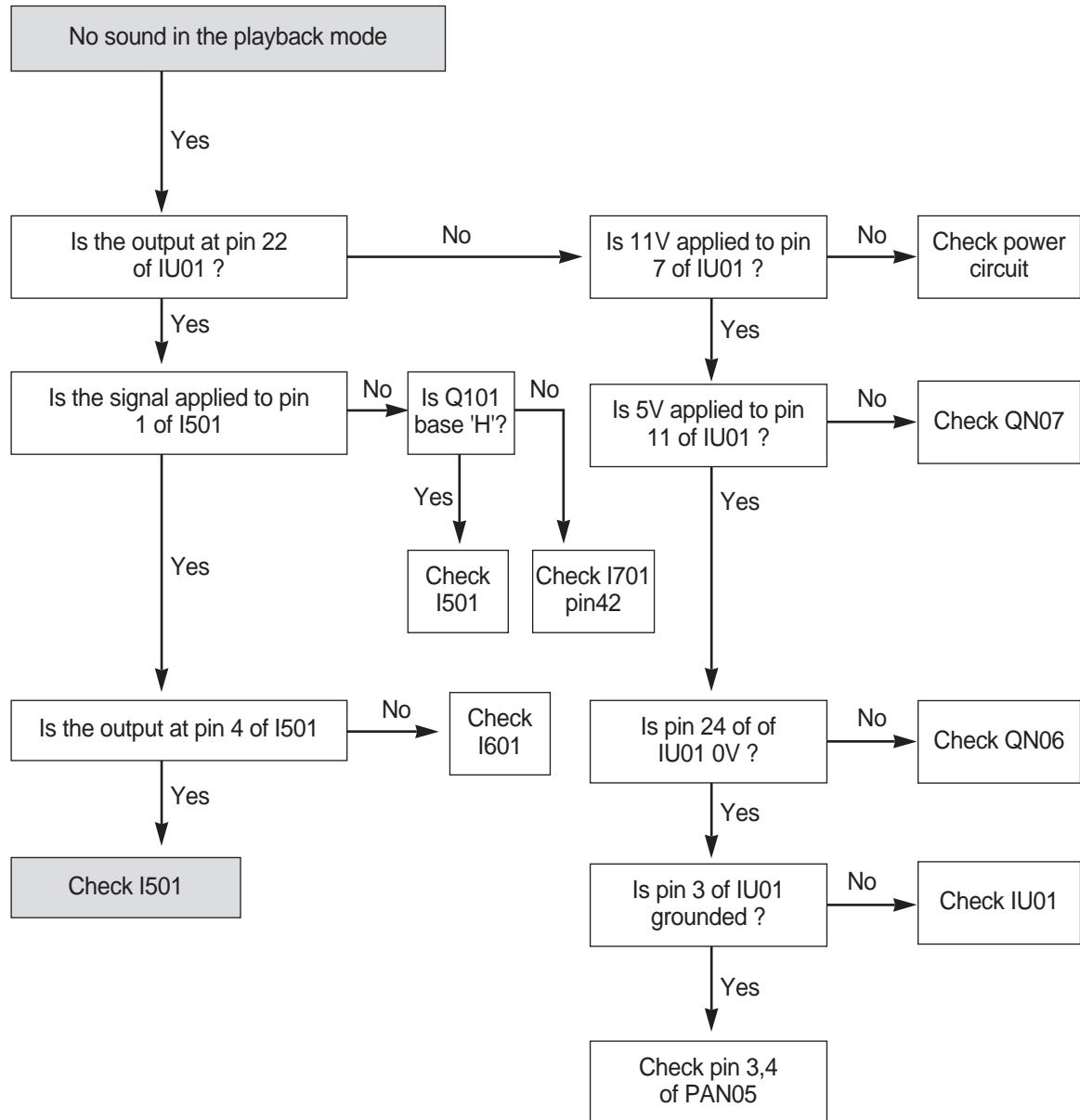


## 5. AUDIO UNIT.

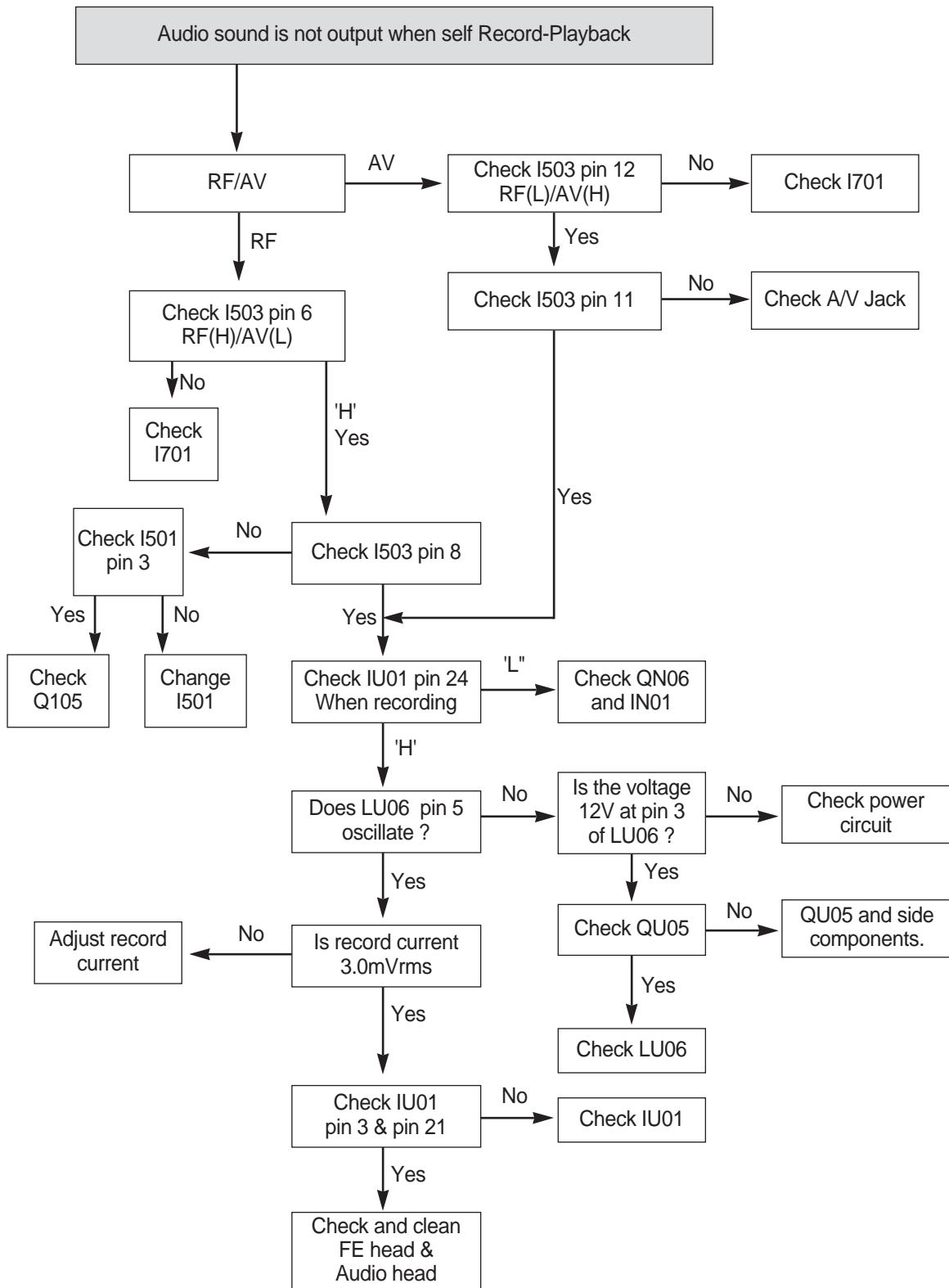
A.



B.



**C. This flow chart must be used only in Record Mode.**



# ELECTRICAL PARTS LIST

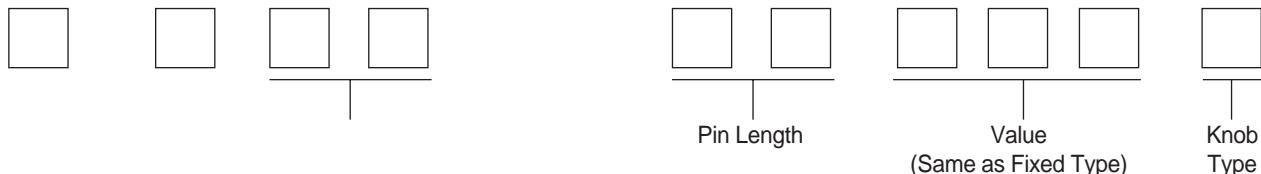
## 1. STANDARD PART NUMBER CODING

### 1-1. RESISTOR CODING

#### 1. Fixed Resistor Coding

<table border="1"> <thead> <tr> <th colspan="2">Type of Resistor</th> </tr> </thead> <tbody> <tr> <td>C</td><td>Composition Resistor</td></tr> <tr> <td>D</td><td>Carbon Resistor</td></tr> <tr> <td>F</td><td>Fusible Resistor</td></tr> <tr> <td>K</td><td>Ceramic Resistor</td></tr> <tr> <td>N</td><td>Metal Film Resistor</td></tr> <tr> <td>S</td><td>Metal-Oxide Film Resistor</td></tr> <tr> <td>W</td><td>Wire Wound Resistor</td></tr> <tr> <td>X</td><td>Cement Resistor</td></tr> <tr> <td>Y</td><td>Chip Resistor</td></tr> </tbody> </table>	Type of Resistor		C	Composition Resistor	D	Carbon Resistor	F	Fusible Resistor	K	Ceramic Resistor	N	Metal Film Resistor	S	Metal-Oxide Film Resistor	W	Wire Wound Resistor	X	Cement Resistor	Y	Chip Resistor	<table border="1"> <thead> <tr> <th colspan="2">Type of Resistor</th> </tr> <tr> <th>Code</th><th>Wattage</th></tr> </thead> <tbody> <tr> <td>-A</td><td>1/6w</td></tr> <tr> <td>-B</td><td>1/8W</td></tr> <tr> <td>-4</td><td>1/4W</td></tr> <tr> <td>-2</td><td>1/2W</td></tr> <tr> <td>01</td><td>1W</td></tr> <tr> <td>02</td><td>2W</td></tr> </tbody> </table>	Type of Resistor		Code	Wattage	-A	1/6w	-B	1/8W	-4	1/4W	-2	1/2W	01	1W	02	2W	<table border="1"> <thead> <tr> <th colspan="2">Distance</th> </tr> <tr> <th>Code</th><th>Distance</th></tr> </thead> <tbody> <tr> <td>A</td><td>2.5mm</td></tr> <tr> <td>B</td><td>5.0mm</td></tr> <tr> <td>C</td><td>7.5mm</td></tr> <tr> <td>D</td><td>10.0mm</td></tr> <tr> <td>E</td><td>12.5mm</td></tr> <tr> <td>F</td><td>15.0mm</td></tr> <tr> <td>G</td><td>17.5mm</td></tr> <tr> <td>H</td><td>20.0mm</td></tr> <tr> <td>G</td><td>17.5mm</td></tr> <tr> <td>H</td><td>20.0mm</td></tr> <tr> <td>J</td><td>22.5mm</td></tr> <tr> <td>K</td><td>25.0mm</td></tr> <tr> <td>X</td><td>Auto Insertion</td></tr> <tr> <td>Z</td><td>Auto Insertion</td></tr> </tbody> </table>	Distance		Code	Distance	A	2.5mm	B	5.0mm	C	7.5mm	D	10.0mm	E	12.5mm	F	15.0mm	G	17.5mm	H	20.0mm	G	17.5mm	H	20.0mm	J	22.5mm	K	25.0mm	X	Auto Insertion	Z	Auto Insertion	<table border="1"> <thead> <tr> <th colspan="2">Value</th> </tr> <tr> <th colspan="2">Example</th> </tr> </thead> <tbody> <tr> <td>478</td><td>.....0.47Ω</td></tr> <tr> <td>479</td><td>.....4.7Ω</td></tr> <tr> <td>470</td><td>.....47Ω</td></tr> <tr> <td>471</td><td>.....470Ω</td></tr> <tr> <td>472</td><td>.....472Ω</td></tr> <tr> <td>473</td><td>.....47Ω</td></tr> </tbody> </table>	Value		Example		478	.....0.47Ω	479	.....4.7Ω	470	.....47Ω	471	.....470Ω	472	.....472Ω	473	.....47Ω	<table border="1"> <thead> <tr> <th colspan="2">Tolerance</th> </tr> <tr> <th>Symbol</th><th>tolerance</th></tr> </thead> <tbody> <tr> <td>F</td><td>±1%</td></tr> <tr> <td>G</td><td>±2%</td></tr> <tr> <td>J</td><td>±5%</td></tr> <tr> <td>K</td><td>±10%</td></tr> <tr> <td>M</td><td>±20%</td></tr> <tr> <td>N</td><td>±30%</td></tr> </tbody> </table>	Tolerance		Symbol	tolerance	F	±1%	G	±2%	J	±5%	K	±10%	M	±20%	N	±30%
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C	Composition Resistor																																																																																																							
D	Carbon Resistor																																																																																																							
F	Fusible Resistor																																																																																																							
K	Ceramic Resistor																																																																																																							
N	Metal Film Resistor																																																																																																							
S	Metal-Oxide Film Resistor																																																																																																							
W	Wire Wound Resistor																																																																																																							
X	Cement Resistor																																																																																																							
Y	Chip Resistor																																																																																																							
Type of Resistor																																																																																																								
Code	Wattage																																																																																																							
-A	1/6w																																																																																																							
-B	1/8W																																																																																																							
-4	1/4W																																																																																																							
-2	1/2W																																																																																																							
01	1W																																																																																																							
02	2W																																																																																																							
Distance																																																																																																								
Code	Distance																																																																																																							
A	2.5mm																																																																																																							
B	5.0mm																																																																																																							
C	7.5mm																																																																																																							
D	10.0mm																																																																																																							
E	12.5mm																																																																																																							
F	15.0mm																																																																																																							
G	17.5mm																																																																																																							
H	20.0mm																																																																																																							
G	17.5mm																																																																																																							
H	20.0mm																																																																																																							
J	22.5mm																																																																																																							
K	25.0mm																																																																																																							
X	Auto Insertion																																																																																																							
Z	Auto Insertion																																																																																																							
Value																																																																																																								
Example																																																																																																								
478	.....0.47Ω																																																																																																							
479	.....4.7Ω																																																																																																							
470	.....47Ω																																																																																																							
471	.....470Ω																																																																																																							
472	.....472Ω																																																																																																							
473	.....47Ω																																																																																																							
Tolerance																																																																																																								
Symbol	tolerance																																																																																																							
F	±1%																																																																																																							
G	±2%																																																																																																							
J	±5%																																																																																																							
K	±10%																																																																																																							
M	±20%																																																																																																							
N	±30%																																																																																																							

#### 2. Semi-Fixed Resistor Coding



Material		Shape	Knob	Code	
CARBON FILM	1	VERTICAL	WITH	1	11
			WITHOUT	2	12
	5	HORIZONTAL	WITH	3	13
			WITHOUT	4	14
METAL GRAZE	5	VERTICAL	WITH	1	21
			WITHOUT	2	22
	5	HORIZONTAL	WITH	3	23
			WITHOUT	4	24
CARBON SOLID	5	VERTICAL	WITH	1	51
			WITHOUT	2	52
	6	HORIZONTAL	WITH	3	53
			WITHOUT	4	54
CERAMIC	6	VERTICAL	WITH	1	61
			WITHOUT	2	62
	6	HORIZONTAL	WITH	3	63
			WITHOUT	4	64

## 1-2. CAPACITOR CODING

### 1. Normal

Type	
Code	Type
A	Aluminum
B	Barrier Layer
C	Ceramic
E	Electrolytic
L	Line Across
M	Mylar
S	Styrol
N	Metalized Polyester
Q	Mica
T	Oil
	Tantal

Distance  
(Same As  
Fixed  
Resistor)

Shape  
or  
Characteristic

Distance	
Code	Voltage
0J	6.3V
1A	10V
1C	16V
1D	20V
1E	25V
1V	35V
1G	40V
1H	50V
1J	63V
2A	100V
2B	125V
2C	160V
2D	200V
2E	250V
2F	315V

Value (Same as Fixed  
Resistor)  
(Same as Fixed  
Resistor)

### 2. Temperature Compensation

Distance  
(Same As Fixed  
Resistor)

Characteristic

Voltage  
(Same as Normal)

Value  
(Same ad Fixed Resistor)

Tolerance  
(Same ad Fixed Resistor)

Characteristic	
Capacitance coefficient(ppm/°C)	Temperature Coefficient(ppm/°C)
A	+100
B	+30
C	0
H	-30
L	-80
P	-150
R	-220
S	-230
T	-470
U	-750
V	-1000
SI	+350~-1000

## 1-3. FUSE CODING

Regulation

Type	
F	Fiber
G	Glass Tube
L	Lead Type
	Glass Tube
T	Temperature
W	Wire
C	Ceramic
P	Plastic

Value  
(Same as Fixed resistor)

Voltage	
1	AC125V
2	AC250V
3	125/250V

Characteristics

## 2.PARTS LIST

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
13100	58G0000078	COIL DEGAUSSING	DC-1400	
13200	48519A4610	CRT GROUND AS	1401H-1015-1P	
V901A	48A96414N1	CRT BARE	A34JLL40X	
00010	58D1000046	COIL DY	ODY-M1401	
PA601	4850703S46	CONN AS	YH025-03+YST025+USW=400	
SP01	4858309110	SPEAKER	3W 8 OHM A30C-560	
ZTR10	48B3035A01	T/REMOCON	R-35A01	TVZ1321
ZTR10	48B3035A04	T/REMOCON	R-35A04	TVZ1341

### ■ CRT PCB

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
A001	4859824613	PCB CRT	T1.6X70X90(197X305/2X4)	
C901	CCXB1H391K	C CERA	50V B 390PF K (TAPPING)	
C902	CCXB1H561K	C CERA	50V B 560PF K (TAPPING)	
C903	CCXB1H391K	C CERA	50V B 390PF K (TAPPING)	
C904	CCXB1H271K	C CERA	50V B 270PF K (TAPPING)	
C905	CCXB1H271K	C CERA	50V B 270PF K (TAPPING)	
C906	CCXB1H271K	C CERA	50V B 270PF K (TAPPING)	
C907	CCXB3D102K	C CERA	2KV B 1000PF K (TAPPING)	
C908	CEXF2E100C	C ELECTRO	250V RUS 10MF (10*20) TP	
D901	D1N4148—	DIODE	1N4148 (TAPPING)	
D902	D1N4148—	DIODE	1N4148 (TAPPING)	
D903	D1N4148—	DIODE	1N4148 (TAPPING)	
PH502	4850703S18	CONN AS	YH025-03+YST025+ULW=200	
PH701	4850704S03	CONN AS	YH025-04+YST025+ULW=300	
Q901	TKTC3207—	TR	KTC3207	
Q902	TKTC3207—	TR	KTC3207	
Q903	TKTC3207—	TR	KTC3207	
R901	RS01Y153J-	R M-OXIDE FILM	1W 15K OHM J	
R902	RS01Y153J-	R M-OXIDE FILM	1W 15K OHM J	
R903	RS01Y153J-	R M-OXIDE FILM	1W 15K OHM J	
R904	RD-2Z272J-	R CARBON FILM	1/2 2.7K OHM J	
R905	RD-2Z272J-	R CARBON FILM	1/2 2.7K OHM J	
R906	RD-2Z272J-	R CARBON FILM	1/2 2.7K OHM J	
R910	RD-AZ121J-	R CARBON FILM	1/6 120 OHM J	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
R911	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
R912	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
R913	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
R914	RD-AZ821J-	R CARBON FILM	1/6 820 OHM J	
R915	RD-AZ821J-	R CARBON FILM	1/6 820 OHM J	
R916	RD-AZ821J-	R CARBON FILM	1/6 820 OHM J	
R917	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
R918	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
R919	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
S901	5S40403035	SW LEVER	JRS-1301	
SK901	4859302430	SOCKET CRT	1SMM03	
VR901	RV4121201P	R SEMI FIXED	NVZ6THT 200 OHM	
VR902	RV4121201P	R SEMI FIXED	NVZ6THT 200 OHM	
VR903	RV4121502P	R SEMI FIXED	NVZ6THT 5K OHM	
VR904	RV4121502P	R SEMI FIXED	NVZ6THT 5K OHM	
VR905	RV4121502P	R SEMI FIXED	NVZ6THT 5K OHM	

## ■ POWER PCB

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
A001	4859810311	PCB POWER	164.5X94.5(330X246/2X2)	
C301	CCXB2H102K	C CERA	500V B 1000PF K (TAPPING)	
C302	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C304	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C305	CMXM2A104J	C MYLAR	100V 0.1MF J TP	
C307	CEXF1V471V	C ELECTRO	35V RSS 470MF (10X20) TP	
C308	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C309	CEXF1V102V	C ELECTRO	35V RSS 1000MF (13X25) TP	
C311	CEXF1V101V	C ELECTRO	35V RSS 100MF (8X11.5) TP	
C312	CMXL1H105J	C MYLAR	50V 1MF J (MEU)	
C313	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
C401	CCXB2H221K	C CERA	500V B 220PF K (TAPPING)	
C403	CCXB3D271K	C CERA	2KV B 270PF K (T)	
C404	CCXB2H102K	C CERA	500V B 1000PF K (TAPPING)	
C405	CCYB2H103K	C CERA	500V B 0.01MF K	
C407	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C408	CEXF2E479V	C ELECTRO	250V RSS 4.7MF (10X16)TP	
C409	CEXF2C479V	C ELECTRO	160V RSS 4.7MF (8X16) TP	
C412	CMYH3C602J	C MYLAR	1.6KV 6000PF J (BUP)	⚠
C413	CMYE2D334J	C MYLAR	200V 0.33MF J (PL)	⚠
C414	CMXM2A104J	C MYLAR	100V 0.1MF J TP	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
C816	CEXF2C101V	C ELECTRO	160V RSS 100MF (16X25) TP	
C818	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
C821	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
D301	DBYV95C—	DIODE	BYV95C (TAPPING)	
D302	D1N4003—	DIODE	1N4003 (TAPPING)	
D401	DBYV95C—	DIODE	BYV95C (TAPPING)	
D402	D1N4003—	DIODE	1N4003 (TAPPING)	
D404	DBYV95C—	DIODE	BYV95C (TAPPING)	
I301	1TA8445K—	IC	TA8445K	
I301A	4857027103	HEAT SINK	ETSD T1.0	
I301B	7174301011	SCREW TAPPTITE	TT2 RND 3X10 MFZN	
L301	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
L401	58C0000026	COIL BEAD	HC-4035	
L402	58H0000019	COIL H-LINEARITY	L-178	⚠
L403	58C9430599	COIL CHOKE	AZ-9004Y(94MH)	
P401	4859240020	CONN WAFER	YFW500-05	
P402	485923162S	CONN WAFER	YW025-03 (STICK)	
PA403	4850709S02	CONN AS	YH025-09+YST025+ULW=300	
PA803	4850702S15	CONN AS	YPH500-02+YLT500+ULW=300	
PA804	4850701S06	CONN AS	YFH800-01+YPT018+ULW=300	
Q301	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q401	TKTC3207 —	TR	KTC3207	⚠
Q402	T2SD2499 —	TR	2SD2499	⚠
Q802	TKSA1013Y-	TR	KSA1013Y	⚠
Q803	TKTC3207 —	TR	KTC3207	
Q804	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
R301	RF01Y369J-	R FUSIBLE	1W 3.6 OHM J	
R302	RD-2Z229J-	R CARBON FILM	1/2 2.2 OHM J	
R303	RS01Y331J-	R M-OXIDE FILM	1W 330 OHM J	
R304	RV4121103P	R SEMI FIXED	NVZ6THT 10K OHM	
R305	RV4121202P	R SEMI FIXED	NVZ6THT 2K OHM	
R306	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R309	RD-4Z822J-	R CARBON FILM	1/4 8.2K OHM J	
R310	RD-4Z561J-	R CARBON FILM	1/4 560 OHM J	
R311	RD-4Z822J-	R CARBON FILM	1/4 8.2K OHM J	
R312	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R313	RD-4Z563J-	R CARBON FILM	1/4 56K OHM J	
R314	RD-4Z473J-	R CARBON FILM	1/4 47K OHM J	
R315	RD-2Z391J-	R CARBON FILM	1/2 390 OHM J	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
R316	RD-2Z102J-	R CARBON FILM	1/2 1K OHM J	
R402	RF01Y369J-	R FUSIBLE	1W 3.6 OHM J	
R403	RF01Y479J-	R FUSIBLE	1W 4.7 OHM J	
R405	RS02Y560JS	R M-OXIDE FILM	2W 56 OHM J SMALL	
R406	RS01Y272J-	R M-OXIDE FILM	1W 2.7K OHM J	
R407	RS01Y562J-	R M-OXIDE FILM	1W 5.6K OHM J	
R408	RD-4Z270J-	R CARBON FILM	1/4 27 OHM J	
R409	RN-4Z2402F	R METAL FILM	1/4 24K OHM F	
R410	RN-4Z2402F	R METAL FILM	1/4 24K OHM F	
R411	RD-2Z134J-	R CARBON FILM	1/2 130K OHM J	
R412	RD-4Z561J-	R CARBON FILM	1/4 560 OHM J	
R413	RD-4Z561J-	R CARBON FILM	1/4 560 OHM J	
R414	RD-4Z562J-	R CARBON FILM	1/4 5.6K OHM J	
R415	RD-2Z224J-	R CARBON FILM	1/2 220K OHM J	⚠
R416	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R820	RD-4Z104J-	R CARBON FILM	1/4 100K OHM J	
R821	RS03Y362JS	R M-OXIDE FILM	3W 3.6K OHM J SMALL	
R822	RS03Y362JS	R M-OXIDE FILM	3W 3.6K OHM J SMALL	
R823	RD-4Z103J-	R CARBON FILM	1/4 10K OHM J	
R826	RD-4Z104J-	R CARBON FILM	1/4 100K OHM J	
R834	RD-4Z103J-	R CARBON FILM	1/4 10K OHM J	
T401	50D0000022	TRANS DRIVE	HD-15D	⚠
T402	50H0000178	FBT	1403SPND	⚠

### ■ Y/C PCB

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
A001	4859804324	PCB Y/C	145X85.5(330X197/4) D	TVZ1321
CCY02	HCQK201JCA	C CHIP CERA	50V CH 200PF J 2012	
CCY03	HCQK300JCA	C CHIP CERA	50V CH 30PF J 2012	
CCY04	HCQK391JCA	C CHIP CERA	50V CH 390PF J 2012	
CCY05	HCQK309CCA	C CHIP CERA	50V CH 3PF C 2012	
CCY09	HCBK223KCA	C CHIP CERA	50V X7R 0.022MF K 2012	
CCY10	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY13	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY16	HCBK223KCA	C CHIP CERA	50V X7R 0.022MF K 2012	
CCY18	HCQK300JCA	C CHIP CERA	50V CH 30PF J 2012	
CCY20	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1321
CCY21	HCBK473KCA	C CHIP CERA	50V X7R 0.047MF K 2012	
CCY22	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY24	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
CCY26	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY27	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY28	HCQK390JCA	C CHIP CERA	50V CH 39PF J 2012	
CCY29	HCQK680JCA	C CHIP CERA	50V CH 68PF J 2012	
CCY30	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY32	HCQK821JCA	C CHIP CERA	50V CH 820PF J 2012	
CCY33	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CCY35	HCQK100DCA	C CHIP CERA	50V CH 10PF D 2012	
CCY36	HCQK270JCA	C CHIP CERA	50V CH 27PF J 2012	
CCY39	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1321
CCY40	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY43	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY44	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY45	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY47	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY48	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CCY49	HCQK120JCA	C CHIP CERA	50V CH 12PF J 2012	
CCY50	HCQK390JCA	C CHIP CERA	50V CH 39PF J 2012	
CCY51	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY52	HCQK470JCA	C CHIP CERA	50V CH 47PF J 2012	
CCY55	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1321
CCY56	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1321
CCY57	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY58	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	TVZ1321
CCY59	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY61	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY63	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY64	HCQK220JCA	C CHIP CERA	50V CH 22PF J 2012	
CCY65	HCQK809DCA	C CHIP CERA	50V CH 8PF D 2012	
CCY67	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY68	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1321
CCY69	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCY91	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCY92	HCQK100DCA	C CHIP CERA	50V CH 10PF D 2012	
CCY93	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CY01	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CY06	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CY07	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CY08	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CY12	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CY14	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CY15	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CY17	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CY19	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
CY23	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CY25	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
CY31	CEXF1C101A	C ELECTRO	16V RSM 100MF (6.3X7) TP	
CY37	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CY38	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
CY41	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CY42	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CY46	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CY54	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CY60	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CY62	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP	
CY89	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
CY90	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
DLY01	58Q0000083	COIL DELAY LINE	SDL-345	
DY01	D1N4148—	DIODE	1N4148 (TAPPING)	
DY02	D1N4148—	DIODE	1N4148 (TAPPING)	
DY03	D1N4148—	DIODE	1N4148 (TAPPING)	
DY04	D1N4148—	DIODE	1N4148 (TAPPING)	
DY05	D1N4148—	DIODE	1N4148 (TAPPING)	
DY11	D1N4148—	DIODE	1N4148 (TAPPING)	
DY12	D1N4148—	DIODE	1N4148 (TAPPING)	
IY01	1LA7423A—	IC VIDEO	LA7423A Y/C 1CHIP (NTSC)	
IY02	1LC89960—	IC VIDEO	LC89960 1H CCD (NTSC)	
IY03	1LA7411—	IC PREAMP	LA7411 2CH PRE/REC AMP	TVZ1321
LY01	5CPZ180K02	COIL PEAKING	18UH K (AXIAL 3.5MM)	
LY03	5CPZ390K02	COIL PEAKING	39UH K (AXIAL 3.5MM)	
IY03	1LA7416—	IC PREAMP	LA7416 4CH PREAMP	TVZ1341
LY04	5CPZ220K02	COIL PEAKING	22UH K (AXIAL 3.5MM)	
LY05	5CPZ680K02	COIL PEAKING	68UH K (AXIAL 3.5MM)	
LY07	5CPZ150K02	COIL PEAKING	15UH K (AXIAL 3.5MM)	
LY09	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
LY10	5CPZ270K02	COIL PEAKING	27UH K (AXIAL 3.5MM)	
LY15	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LY16	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LY17	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LY18	5CPZ101K02	COIL PEAKING	100UH K (AXIAL 3.5MM)	
LY30	5CPZ150K02	COIL PEAKING	15UH K (AXIAL 3.5MM)	
LY31	5CPZ150K02	COIL PEAKING	15UH K (AXIAL 3.5MM)	
PAY01	4859231710	CONN HOUSING	BH254-08	TVZ1341
PAY01	4859231910	CONN HOUSING	BH245-10	TVZ1341
PAY02	4859232310	CONN HOUSING	BH254-14	
PAY04	4859245710	CONN HOUSING	00-8370-041-000-800	
PAY04	4859246010	CONN HOUSING	00-8370-071-000-800	TVZ1341
PY05	4859271421	CONN WAFER	00-8283-0511-00000 ANGLE	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
PY09	4859271521	CONN WAFER	00-8283-0611-00000 ANGLE	
QY01	TKTA1266Y-	TR	KTA1266Y	
QY02	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QY03	TKTA1266Y-	TR	KTA1266Y	
QY04	TKTA1266Y-	TR	KTA1266Y	
QY05	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QY06	TKTA1266Y-	TR	KTA1266Y	
QY07	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QY08	TKTA1266Y-	TR	KTA1266Y	
QY09	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QY10	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
RCJ01	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ02	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ03	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ10	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ11	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ12	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCY02	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCY03	HRFT132JCA	R CHIP	1/10 1.3K OHM J 2012	
RCY04	HRFT272JCA	R CHIP	1/10 2.7K OHM J 2012	
RCY05	HRFT681JCA	R CHIP	1/10 680 OHM J 2012	
RCY06	HRFT822JCA	R CHIP	1/10 8.2K OHM J 2012	
RCY07	HRFT182JCA	R CHIP	1/10 1.8K OHM J 2012	
RCY09	HRFT272JCA	R CHIP	1/10 2.7K OHM J 2012	
RCY11	HRFT122JCA	R CHIP	1/10 1.2K OHM J 2012	
RCY12	HRFT391JCA	R CHIP	1/10 390 OHM J 2012	
RCY13	HRFT361JCA	R CHIP	1/10 360 OHM J 2012	
RCY14	HRFT561JCA	R CHIP	1/10 560 OHM J 2012	
RCY15	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCY17	HRFT182JCA	R CHIP	1/10 1.8K OHM J 2012	
RCY20	HRFT820JCA	R CHIP	1/10 82 OHM J	
RCY21	HRFT911JCA	R CHIP	1/10 910 OHM J 2012	
RCY23	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCY24	HRFT221JCA	R CHIP	1/10 220 OHM J 2012	
RCY25	HRFT203JCA	R CHIP	1/10 20K OHM J 2012	
RCY26	HRFT823JCA	R CHIP	1/10 82K OHM J 2012	
RCY28	HRFT105JCA	R CHIP	1/10 1M OHM J 2012	
RCY29	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCY30	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RCY31	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCY32	HRFT221JCA	R CHIP	1/10 220 OHM J 2012	
RCY33	HRFT221JCA	R CHIP	1/10 220 OHM J 2012	
RCY36	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCY39	HRFT332JCA	R CHIP	1/10 3.3K OHM J 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RCY40	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RCY41	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCY42	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012	
RCY43	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	
RCY44	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	TVZ1321
RCY45	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCY46	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCY48	HRFT822JCA	R CHIP	1/10 8.2K OHM J 2012	
RCY90	HRFT000-CA	R CHIP	1/10 0 OHM J 2012	
RCY92	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RY01	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J	
RY08	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RY10	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RY18	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
RY27	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RY34	RV4121102P	R SEMI FIXED	NVZ6TH 1K OHM	
RY35	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RY37	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
RY38	RD-AZ182J	R CARBON FILM	1/6 1.8K OHM J	
RY91	RV4121202P	R SEMI FIXED	NVZ6THT 2K OHM	
XY01	5XE3R5795B	CRYSTAL QUARTZ	HC-49/U 3.579545MHZ 15PPM	

## ■ Y/C PCB (4HD)

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
A001	4859807324	PCB Y/C	145X85.5(330X197/4)D	TVZ1341
CCY68	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	TVZ1341
CCY71	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1341
CCY72	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1341
CCY73	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1341
CCY74	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1341
CCY75	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1341
CCY76	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1341
CCY77	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1341
CCY81	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1341
CCY83	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	TVZ1341
CCY78	HCQK390JCA	C CHIP CERA	50V CH 39PF J 2012	TVZ1341
CCY79	HCQK390JCA	C CHIP CERA	50V CH 39PF J 2012	TVZ1341
CCY80	HCB102KCA	C CHIP CERA	50V X7R 1000PF K 2012	TVZ1341
CCY82	HCB102KCA	C CHIP CERA	50V X7R 1000PF K 2012	TVZ1341
RCY89	HRFT203JCA	R CHIP	1/10 20K OHM J 2012	TVZ1341
DY06	DIN4148---	DIODE	IN4148	TVZ1341
RY03	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	TVZ1341
RY04	RD-AZ502J-	R CARBON FILM	1/6 5K OHM J	TVZ1341
RY44	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	TVZ1341

## ■ PCB CONTROL

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
A001	4859827814	PCB CONTROL	T1.6X280X68.6	
CQ01	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CQ03	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
CQ04	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
CQ05	CEXF1C221V	C ELECTRO	16V RSS 220MF (8X11.5) TP	
DQ01	DKLR114L—	LED	KLR114L	
DQ02	DKLG114L—	LED	KLG-114L	
DQ03	DKLY114L—	LED	KLY 114-L (YELLOW)	
DQ04	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
DQ05	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
DQ06	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
DQ07	DUZ9R1BM—	DIODE ZENER	UZ-9.1BM 9.1V	
DQ08	DUZ9R1BM—	DIODE ZENER	UZ-9.1BM 9.1V	
DQ09	D1N4148—	DIODE	1N4148 (TAPPING)	
IQ01	1TFMW5380-	IC PREAMP	TFMW5380	
JP01	4859104940	JACK PHONO	YSC02P-4100-13A	
PA501	4850704S07	CONN AS	YH025-04+YST025+USW=600	
PAN03	4859241810	CONN AS	YJN250-10	
QQ01	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
RQ01	RD-AZ161J-	R CARBON FILM	1/6 160 OHM J	
RQ02	RD-AZ161J-	R CARBON FILM	1/6 160 OHM J	
RQ03	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J	
RQ04	RD-AZ361J-	R CARBON FILM	1/6 360 OHM J	
RQ05	RD-AZ511J-	R CARBON FILM	1/6 510 OHM J	
RQ06	RD-AZ112J-	R CARBON FILM	1/6 1.1K OHM J	
RQ07	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J	
RQ08	RD-AZ202J-	R CARBON FILM	1/6 2K OHM J	
RQ09	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RQ10	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RQ11	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J	
RQ12	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J	
RQ13	RD-AZ271J-	R CARBON FILM	1/6 270 OHM J	
RQ15	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RQ16	RD-AZ220J-	R CARBON FILM	1/6 22 OHM J	
RQ17	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RQ18	RD-AZ820J-	R CARBON FILM	1/6 82 OHM J	
RQ19	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RQ20	RD-AZ224J-	R CARBON FILM	1/6 220K OHM J	
RQ21	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
RQ22	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J	
SWQ01	5S50101090	SW TACT	SKHV17910A	
SWQ02	5S50202002	SW TACT	JTM-1108B 2C-2P	
SWQ03	5S50202002	SW TACT	JTM-1108B 2C-2P	
SWQ04	5S50101090	SW TACT	SKHV17910A	
SWQ05	5S50101090	SW TACT	SKHV17910A	
SWQ06	5S50101090	SW TACT	SKHV17910A	
SWQ07	5S50101090	SW TACT	SKHV17910A	
SWQ08	5S50101090	SW TACT	SKHV17910A	
SWQ09	5SN0101Z20	SW DETECT	JDS1105-6X	

## ■ PCB MAIN

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
A001	4859808391	PCB MAIN	T1.6X330X240	
C103	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C104	CMXM2A472J	C MYLAR	100V 4700PF J TP	
C105	CEXF1H228V	C ELECTRO	50V RSS 0.22MF (5X11) TP	
C110	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
C111	CEXF1H478V	C ELECTRO	50V RSS 0.47MF (5X11) TP	
C113	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
C117	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C119	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C121	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C123	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C126	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C128	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C130	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
C501	CEXF1C471V	C ELECTRO	16V RSS 470MF (10X12.5)TP	
C502	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
C503	CMXM2A682J	C MYLAR	100V 6800PF J TP	
C504	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C505	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C506	CMXM2A182J	C MYLAR	100V 1800PF J TP	
C507	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C509	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C512	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C515	CEXD1H109F	C ELECTRO	50V RND 1MF (5X11) TP	
C518	CEXD1H109F	C ELECTRO	50V RND 1MF (5X11) TP	
C521	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C522	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C523	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C524	CEXF1H228V	C ELECTRO	50V RSS 0.22MF (5X11) TP	
C527	CEXF1H228V	C ELECTRO	50V RSS 0.22MF (5X11) TP	
C532	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
C534	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C560	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
C570	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C601	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
C602	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C604	CEXF1C471V	C ELECTRO	16V RSS 470MF (10X12.5)TP	
C605	CEXF1C331V	C ELECTRO	16V RSS 330MF (8X11.5) TP	
C606	CMXM2A104J	C MYLAR	100V 0.1MF J TP	
C607	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C609	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
C706	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z (AXIAL)	
C707	CEXF1H478V	C ELECTRO	50V RSS 0.47MF (5X11) TP	
C708	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C709	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C710	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C714	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
C720	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z (AXIAL)	
C723	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C724	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP	
C726	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C728	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
C730	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C731	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C732	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
C733	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C801	CL1UC3104M	C LINE ACROSS	WORLD AC250V 0.1UF M R.47	⚠
C802	CCXE2H472P	C CERA	500V E 4700PF P (TAPPING)	⚠
C803	CCXE2H472P	C CERA	500V E 4700PF P (TAPPING)	⚠
C804	CCXE2H472P	C CERA	500V E 4700PF P (TAPPING)	⚠
C805	CCXE2H472P	C CERA	500V E 4700PF P (TAPPING)	⚠
C806	CEYM2D331T	C ELECTRO	200V LWF 330MF (25X50)	⚠
C807	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP	⚠
C808	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP	
C809	CEXF2A100V	C ELECTRO	100V RSS 10MF (6.3X11) TP	⚠
C810	CEXF1C471V	C ELECTRO	16V RSS 470MF (10X12.5)TP	
C811	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP	
C812	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
C813	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C814	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
C815	CEXF2C101V	C ELECTRO	160V RSS 100MF (16X25) TP	
C817	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C819	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
C820	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C822	CCXB1H152K	C CERA	50V B 1500PF K (TAPPING)	
C823	CMYE2J222J	C MYLAR	630V PL 2200PF J	
C824	CH1BFE472M	C CERA AC	AC400V 4700PF M U/C/V	
C827	CCXB3D102K	C CERA	2KV B 1000PF K (TAPPING)	
C828	CCXF1H103Z	C CERA	50V F 0.01MF Z (TAPPING)	
C829	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
C840	CEXF1C101A	C ELECTRO	16V RSM 100MF (6.3X7) TP	
C845	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CC102	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC106	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
CC107	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC108	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC109	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC112	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC114	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC115	HCQK270JCA	C CHIP CERA	50V CH 27PF J 2012	
CC116	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC118	HCQK270JCA	C CHIP CERA	50V CH 27PF J 2012	
CC120	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC122	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC125	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC127	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC129	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC131	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC132	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC133	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC134	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC510	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC511	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC513	HCQK431JCA	C CHIP CERA	50V CH 430PF J 2012	
CC514	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC516	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC517	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC519	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC520	HCQK180JCA	C CHIP CERA	50V CH 18PF J 2012	
CC525	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC526	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC528	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC529	HCQK470JCA	C CHIP CERA	50V CH 47PF J 2012	
CC530	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC531	HCQK820JCA	C CHIP CERA	50V CH 82PF J 2012	
CC533	HCQK681JCA	C CHIP CERA	50V CH 680PF J 2012	
CC536	HCQK151JCA	C CHIP CERA	50V CH 150PF J 2012	
CC540	HCQK151JCA	C CHIP CERA	50V CH 150PF J 2012	
CC603	HCQK681JCA	C CHIP CERA	50V CH 680PF J 2012	
CC608	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CC701	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC702	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC703	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC704	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC711	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CC712	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CC713	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
CC715	HCQK220JCA	C CHIP CERA	50V CH 22PF J 2012	
CC716	HCQK180JCA	C CHIP CERA	50V CH 18PF J 2012	
CC717	HCQK180JCA	C CHIP CERA	50V CH 18PF J 2012	
CC718	HCQK220JCA	C CHIP CERA	50V CH 22PF J 2012	
CC719	HCQK561JCA	C CHIP CERA	50V CH 560PF J 2012	
CC721	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC722	HCQK201JCA	C CHIP CERA	50V CH 200PF J 2012	
CC725	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CC727	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC729	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC734	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCN06	HCQK120JCA	C CHIP CERA	50V CH 12PF J 2012	
CCN09	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN11	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN13	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CCN14	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CCN15	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CCN16	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CCN17	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CCN18	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CCN20	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN24	HCQK120JCA	C CHIP CERA	50V CH 12PF J 2012	
CCN25	HCQK120JCA	C CHIP CERA	50V CH 12PF J 2012	
CCN26	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCN28	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCN29	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCN31	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN33	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CCN34	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN36	HCQK471JCA	C CHIP CERA	50V CH 470PF J 2012	
CCN37	HCQK471JCA	C CHIP CERA	50V CH 470PF J 2012	
CCN38	HCQK471JCA	C CHIP CERA	50V CH 470PF J 2012	
CCN39	HCQK471JCA	C CHIP CERA	50V CH 470PF J 2012	
CCN44	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CCN46	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN48	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN62	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCN63	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCU01	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CCU02	HCBK272KCA	C CHIP CERA	X7R 50V 2700PF K 2012	
CCU04	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCU11	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCU12	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
CCU14	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012	
CCU15	HCBK153KCA	C CHIP CERA	50V X7R 0.015MF K 2012	
CCU19	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CCU31	HCBK122KCA	C CHIP CERA	50V X7R 1200PF K 2012	
CN04	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
CN05	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
CN07	CEXF1C100A	C ELECTRO	16V RSM 10MF 5X7	
CN08	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
CN10	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
CN21	CCXF1H223Z	C CERA	50V F 0.022MF Z (TAPPING)	
CN22	CCXF1H223Z	C CERA	50V F 0.022MF Z (TAPPING)	
CN23	CEXF1H109A	C ELECTRO	50V RSM 1MF (5X11) TP	
CN27	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z (AXIAL)	
CN30	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CN32	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CN35	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
CN40	CEXF1C101A	C ELECTRO	16V RSM 100MF (6.3X11) TP	
CN41	CEXF1C101A	C ELECTRO	16V RSM 100MF (6.3X11) TP	
CN42	CEXF1C101A	C ELECTRO	16V RSM 100MF (6.3X11) TP	
CN43	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
CN45	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
CN47	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
CN64	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
CU01	CMXM2A153J	C MYLAR	100V 0.015MF J TP	
CU03	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
CU05	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
CU06	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
CU07	CMXM2A153J	C MYLAR	100V 0.015MF J TP	
CU09	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
CU10	CEXF1C100A	C ELECTRO	16V RSM 10MF 5X7	
CU13	CEXF1C100A	C ELECTRO	16V RSM 10MF 5X7	
CU16	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
CU17	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
CU18	CEXF1H339V	C ELECTRO	50V RSS 3.3MF (5X11) TP	
CU20	CMXM2A822J	C MYLAR	100V 8200PF J TP	
CU21	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
CU22	CMXM2A472J	C MYLAR	100V 4700PF J TP	
CU23	CMXM2A682J	C MYLAR	100V 6800PF J TP	
CU24	CMXM2A473J	C MYLAR	100V 0.047MF J TP	
CU25	CCXB2H221K	C CERA	500V B 220PF K (TAPPING)	
CU26	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
CU27	CMXM2A473J	C MYLAR	100V 0.047MF J TP	
CU28	CMXM2A472J	C MYLAR	100V 4700PF J TP	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
CU29	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
CU30	CCZF1E103Z	C CERA	25V F 0.01MF Z (AXIAL)	
D102	DUZ5R1BM—	DIODE ZENER	UZ-5.1BM	
D103	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
D104	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
D105	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
D106	1UPC574J—	IC	UPC574J	
D107	DUZ5R1BM—	DIODE ZENER	UZ-5.1BM	
D501	D1N4148—	DIODE	1N4148 (TAPPING)	
D502	D1N4148—	DIODE	1N4148 (TAPPING)	
D504	DUZ12BM—	DIODE ZENER	UZ-12BM (UNIZON)	
D505	D1N4148—	DIODE	1N4148 (TAPPING)	
D506	D1N4148—	DIODE	1N4148 (TAPPING)	
D507	D1N4148—	DIODE	1N4148 (TAPPING)	
D508	D1N4148—	DIODE	1N4148 (TAPPING)	
D510	D1N4148—	DIODE	1N4148 (TAPPING)	
D511	D1N4148—	DIODE	1N4148 (TAPPING)	
D512	D1N4148—	DIODE	1N4148 (TAPPING)	
D513	D1N4148—	DIODE	1N4148 (TAPPING)	
D701	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM(TAPPING)	
D702	D1N4148—	DIODE	1N4148 (TAPPING)	
D703	D1N4003—	DIODE	1N4003 (TAPPING)	
D704	D1N4003—	DIODE	1N4003 (TAPPING)	
D707	D1N4148—	DIODE	1N4148 (TAPPING)	
D708	D1N4148—	DIODE	1N4148 (TAPPING)	
D801	D1N4148—	DIODE	1N4148 (TAPPING)	
D802	D1S1888—	DIODE	1S1888 (TAPPING)	⚠
D803	D1S1888—	DIODE	1S1888 (TAPPING)	⚠
D804	D1S1888—	DIODE	1S1888 (TAPPING)	⚠
D805	D1S1888—	DIODE	1S1888 (TAPPING)	⚠
D807	DBYV95C—	DIODE	BYV95C (TAPPING)	
D808	DBYV95C—	DIODE	BYV95C (TAPPING)	
D809	DBYV95C—	DIODE	BYV95C (TAPPING)	
D810	DBYV95C—	DIODE	BYV95C (TAPPING)	
D811	DBYV95C—	DIODE	BYV95C (TAPPING)	
D812	DBYV95C—	DIODE	BYV95C (TAPPING)	
D813	DBYW95C—	DIODE	BYW95C (TAPPING)	
D814	DBYW95C—	DIODE	BYW95C (TAPPING)	
D820	D1N4148—	DIODE	1N4148 (TAPPING)	
D821	D1N4148—	DIODE	1N4148 (TAPPING)	
DN01	D1N4148—	DIODE	1N4148 (TAPPING)	
DN02	D1N4148—	DIODE	1N4148 (TAPPING)	
DN03	D1N4148—	DIODE	1N4148 (TAPPING)	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
DN06	D1N4003—	DIODE	1N4003 (TAPPING)	
DN07	D1N4003—	DIODE	1N4003 (TAPPING)	
DN13	DUZ6R2BM—	DIODE ZENER	UZ-6.2BM 6.2V	
DN15	D1N4148—	DIODE	1N4148 (TAPPING)	
DN17	DS15312H—	LED IR	SI5312-H	
DN18	DIN4148—	DIODE	IN4148	TVZ1341
DN19	DIN4148—	DIODE	IN4148	TVZ1341
DN20	DIN4148—	DIODE	IN4148	TVZ1341
DN21	DIN4148—	DIODE	IN4148	TVZ1341
DN22	DIN4148—	DIODE	IN4148	TVZ1341
DN23	DIN4148—	DIODE	IN4148	TVZ1341
DN24	D1N4003—	DIODE	1N4003 (TAPPING)	
DU01	D1N4148—	DIODE	1N4148 (TAPPING)	
DU02	D1N4148—	DIODE	1N4148 (TAPPING)	
DU03	D1N4148—	DIODE	1N4148 (TAPPING)	
F801	5F1GB4021M	FUSE GLASS TUBE	UL/CSA MF51 4A 125V NM	⚠
F801A	4857415001	CLIP FUSE	PFC5000-0702	
F801B	4857415001	CLIP FUSE	PFC5000-0702	
I501	NM52335SP-	IC CHROMA	M52335SP-600	
I502	1K1A7809P1	IC REGULATOR	K1A7809PI	
I502A	4857026900	HEAT SINK	AL EX	
I503	1TC4066BP-	IC	TC 4066BP	
I601	1KA2201N—	IC AMP	KA2201N	
I701	1M37267103	IC MICOM	M37267M6-103SP	
I702	124LC01B—	IC MEMORY	24LC01B	
I703	1MN1380L—	IC COMPARATOR(RESET)	MN1380-L(RESET IC)	
I801	1STRS5707-	IC POWER	STR-S5707	⚠
I801A	4857025403	HEAT SINK	AL050P-H24 T=2	
I803	1K1A7806P1	IC REGULATOR	KIA7806PI	
I803A	4857027301	HEAT SINK	AL 6063S-T5	
I804	1PQ12RF11-	IC REGULATOR	PQ12RF11	
I805	1PQ12RF11-	IC REGULATOR	PQ12RF11	
I806	1K1A7809P1	IC REGULATOR	K1A7809PI	
IN01	1642AN3227	IC MICOM	TMP91C642AN-3227	
IN03	1KA4558—	IC AMP	KA4558	
IN04	ITC4053BP---	IC	TC4053BP	TVZ1341
IN05	1BA6209—	IC	BA6209	
IN06	1K1A7042P-	IC SWITCH	KIA7042P	
IN07	1SG239S—	IC SENSOR	SG-239S	
IU01	1BA7790LS-	IC AUDIO	BA7790LS	
L102	58B25R2S60	COIL PIF	TRF-0082(STICK)	
L103	58C5580019	COIL CHOKE	TRF-9225 (0.55UH)	
L104	5CPZ470K02	COIL PEAKING	47UH K (AXIAL 3.5MM)	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
L105	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
L106	58C5580019	COIL CHOKE	TRF-9225 (0.55UH)	
L107	5CPZ150K02	COIL PEAKING	15UH K (AXIAL 3.5MM)	
L108	58B0000S81	COIL PIF	TRF-4524 (STICK)	
L501	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
L502	5CPZ479K02	COIL PEAKING	4.7UH K (AXIAL 3.5MM)	
L504	5CPZ569K02	COIL PEAKING	5.6UH K (AXIAL 3.5MM)	
L505	5CPZ829K02	COIL PEAKING	8.2UH K (AXIAL 3.5MM)	
L601	58S0000S41	COIL SIF	TRF-5004C(STICK)	
L703	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
L801	5PTLF472BE	FILTER LINE	TLF-472BE	⚠
L803	5MC0000100	COIL BEAD	MD-5 (HC-3550)	
L804	58C0000090	COIL CHOKE	L-45S	
L805	58C0000090	COIL CHOKE	L-45S	
LN04	5CPZ101K02	COIL PEAKING	100UH K (AXIAL 3.5MM)	
LN05	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LN06	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LU01	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LU02	5CPX103J—	COIL PEAKING	10MH 5MM J RADIAL	
LU03	5CPZ101K04	COIL PEAKING	100UH K (AXIAL 10.5MM)	
LU04	5CPX103J—	COIL PEAKING	10MH 5MM J RADIAL	
LU06	5800000027	COIL OSC	DEO-008	
P102	485923162S	CONN WAFER	YW025-03 (STICK)	
P403	485923522S	CONN WAFER	YW025-09 (STICK)	
P501	485923172S	CONN WAFER	YW025-04 (STICK)	
P504	485923172S	CONN WAFER	YW025-04 (STICK)	
P601	485923162S	CONN WAFER	YW025-03 (STICK)	
P602	485923162S	CONN WAFER	YW025-03 (STICK)	
P802	4859242220	CONN WAFER	YFW800-02	
P803	4859238620	CONN WAFER	YPW500-02	
P804	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
PAN04	4850707V03	CONN AS	60-8283-3078-45+ULW=100	
PAN05	4850706V10	CONN AS	60-8283-3068-45+UAW=150	
PAN06	4850702V07	CONN AS	BIC-02H-20T+USW=100	
PN03	4859267420	CONN WAFER	BMW 250-10	
PWC01	4859903610	CORD POWER	KKP-8W SPT-2#18AWG(ST)	
PWC01	4859904310	CORD POWER AS	WS-87(SPT-2)	TVZ1341X
PY01	4859249420	CONN WAFER	YF254-08	TVZ1321
PY01	4859249620	CONN WAFER	YF254-10	TVZ1341
PY02	4859250020	CONN WAFER	YF254-14	
PY03	4859278220	CONN WAFER	TKC-G10P-A1	
PY04	4859278120	CONN WAFER	TKC-G06P-A1	
Q101	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
Q102	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q103	TKTC3197—	TR	KTC 3197	
Q104	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q105	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q106	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q502	TKTA1266Y-	TR	KTA1266Y	
Q503	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q504	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q505	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q507	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q510	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q520	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q521	TKTA1266Y-	TR	KTA1266Y	
Q522	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q701	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q702	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q704	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q705	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q706	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q801	TKTC3203Y-	TR	KTC3203-Y	
Q805	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q806	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QN03	TKTA1266Y-	TR	KTA1266Y	
QN04	TKTA1266Y-	TR	KTA1266Y	
QN05	TKTA1266Y-	TR	KTA1266Y	
QN06	TKTA1266Y-	TR	KTA1266Y	
QN07	TKTA1266Y-	TR	KTA1266Y	
QN08	TKTA1266Y-	TR	KTA1266Y	
QN09	TKTA1266Y-	TR	KTA1266Y	
QN11	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QU01	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
QU02	TKTA1266Y-	TR	KTA1266Y	
QU03	TKTC3197—	TR	KTC 3197	
QU05	TKTC3202Y-	TR	KTC3202Y	
R106	RV5426472P	R SEMI FIXED	RH0638C 4.7K OHM B	
R109	RS02Z121JS	R M-OXIDE FILM	2W 120 OHM J SMALL	
R118	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R123	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R124	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R126	RS01Z750J-	R M-OXIDE FILM	1W 75 OHM J (TAPPING)	
R503	DR320K—	THERMISTOR	R-320K	
R504	RV5426472P	R SEMI FIXED	RH0638C 4.7K OHM B	
R507	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
R524	RD-4Z241J-	R CARBON FILM	1/4 240 OHM J	
R525	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R528	RD-AZ683J-	R CARBON FILM	1/6 68K OHM J	
R530	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R536	RD-AZ184J-	R CARBON FILM	1/6 180K OHM J	
R538	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R547	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J	
R549	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R551	RD-AZ184J-	R CARBON FILM	1/6 180K OHM J	
R570	RD-AZ303J-	R CARBON FILM	1/6 30K OHM J	
R572	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J	
R604	RD-AZ512J-	R CARBON FILM	1/6 5.1K OHM J	
R606	RD-4Z109J-	R CARBON FILM	1/4 1 OHM J	
R607	RD-4Z560J-	R CARBON FILM	1/4 56 OHM J	
R701	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R702	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R703	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R704	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R707	RD-AZ562J-	R CARBON FILM	1/6 5.6K OHM J	
R712	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R714	RD-AZ512J-	R CARBON FILM	1/6 5.1K OHM J	
M1911	4851923800	DECK AS	SVR-K7200	TVZ1321
M1911	4851927200	DECK AS	SVR-K7400	TVZ1341
R719	RD-AZ822J-	R CARBON FILM	1/6 8.2K OHM J	
R723	RD-AZ272J-	R CARBON FILM	1/6 2.7K OHM J	
R724	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J	
R725	RD-AZ273J-	R CARBON FILM	1/6 27K OHM J	
R726	RD-AZ432J-	R CARBON FILM	1/6 4.3K OHM J	
R727	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J	
R746	RD-AZ822J-	R CARBON FILM	1/6 8.2K OHM J	
R747	RD-AZ561J-	R CARBON FILM	1/6 560 OHM J	
R750	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R754	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R756	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R766	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R801	DEC7R0M140	POSISTOR	ECPAC7R0M140	⚠
R803	RX07B109JN	R CEMENT	7W 1 OHM J BENCH 4P	
R804	RC-2Z225J-	R CARBON COMP	1/2 2.2M OHM J	⚠
R805	RS02Z153JS	R M-OXIDE FILM	2W 15K OHM J SMALL	
R806	RS02Z363JS	R M-OXIDE FILM	2W 36K OHM J SMALL	⚠
R807	RS01Z180J-	R M-OXIDE FILM	1W 18 OHM J (TAPPING)	⚠
R808	RS01Z473J-	R M-OXIDE FILM	1W 47K OHM J (TAPPING)	
R809	RF02Z278J-	R FUSIBLE	2W 0.27 OHM J (TAPPING)	⚠

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
R812	RD-2Z124J-	R CARBON FILM	1/2 120K OHM J	
R813	RD-4Z104J-	R CARBON FILM	1/4 100K OHM J	⚠
R814	RD-4Z680J-	R CARBON FILM	1/4 68 OHM J	
R815	RD-4Z182J-	R CARBON FILM	1/4 1.8K OHM J	
R816	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	⚠
R819	RD-4Z229J-	R CARBON FILM	1/4 2.2 OHM J	
R824	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J	
R825	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R827	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R828	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R829	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R830	RS02Z759JS	R M-OXIDE FILM	2W 7.5 OHM J SMALL	
R831	RS02Z759JS	R M-OXIDE FILM	2W 7.5 OHM J SMALL	
R832	RD-4Z241J-	R CARBON FILM	1/4 240 OHM J	
R833	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J	
RC102	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012	
RC103	HRFT683JCA	R CHIP	1/10 68K OHM J 2012	
RC104	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RC105	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RC107	HRFT683JCA	R CHIP	1/10 68K OHM J 2012	
RC108	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC110	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RC112	HRFT221JCA	R CHIP	1/10 220 OHM J 2012	
RC113	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RC114	HRFT562JCA	R CHIP	1/10 5.6K OHM J 2012	
RC115	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012	
RC116	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RC117	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	
RC119	HRFT563JCA	R CHIP	1/10 56K OHM J 2012	
RC121	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RC122	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC125	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC127	HRFT124JCA	R CHIP	1/10 120K OHM J 2012	
RC128	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012	
RC129	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC132	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC133	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC134	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC135	HRFT822JCA	R CHIP	1/10 8.2K OHM J 2012	
RC136	HRFT683JCA	R CHIP	1/10 68K OHM J 2012	
RC137	HRFT474JCA	R CHIP	1/10 470K OHM J 2012	
RC140	HRFT330JCA	R CHIP	1/10 33 OHM J 2012	
RC141	HRFT120JCA	R CHIP	1/10 12 OHM J 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RC142	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC143	HRFT272JCA	R CHIP	1/10 2.7K OHM J 2012	
RC144	HRFT124JCA	R CHIP	1/10 120K OHM J 2012	
RC145	HRFT623JCA	R CHIP	1/10 62K OHM J 2012	
RC501	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012	
RC502	HRFT471JCA	R CHIP	1/10 470 OHM J 2012	
RC505	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	
RC508	HRFT824JCA	R CHIP	1/10 820K OHM J 2012	
RC509	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RC512	HRFT912JCA	R CHIP	1/10 9.1K OHM J 2012	
RC514	HRFT392JCA	R CHIP	1/10 3.9K OHM J 2012	
RC515	HRFT512JCA	R CHIP	1/10 5.1K OHM J 2012	
RC516	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC517	HRFT512JCA	R CHIP	1/10 5.1K OHM J 2012	
RC518	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RC519	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC520	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RC521	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC522	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RC523	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC526	HRFT471JCA	R CHIP	1/10 470 OHM J 2012	
RC527	HRFT273JCA	R CHIP	1/10 27K OHM J 2012	
RC529	HRFT561JCA	R CHIP	1/10 560 OHM J 2012	
RC531	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC532	HRFT393JCA	R CHIP	1/10 39K OHM J 2012	
RC533	HRFT333JCA	R CHIP	1/10 33K OHM J 2012	
RC534	HRFT333JCA	R CHIP	1/10 33K OHM J 2012	
RC535	HRFT474JCA	R CHIP	1/10 470K OHM J 2012	
RC537	HRFT395JCA	R CHIP	1/10 3.9M OHM J 2012	
RC539	HRFT562JCA	R CHIP	1/10 5.6K OHM J 2012	
RC540	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC541	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC542	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC543	HRFT511JCA	R CHIP	1/10 510 OHM J 2012	
RC544	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC545	HRFT392JCA	R CHIP	1/10 3.9K OHM J 2012	
RC546	HRFT684JCA	R CHIP	1/10 680K OHM J 2012	
RC548	HRFT181JCA	R CHIP	1/10 180 OHM J 2012	
RC550	HRFT151JCA	R CHIP	1/10 150 OHM J 2012	
RC552	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC561	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC562	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC563	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RC564	HRFT122JCA	R CHIP	1/10 1.2K OHM J 2012	
RC565	HRFT273JCA	R CHIP	1/10 27K OHM J 2012	
RC566	HRFT561JCA	R CHIP	1/10 560 OHM J 2012	
RC567	HRFT114JCA	R CHIP	1/10 110K OHM J 2012	TVZ1321Only
RC571	HRFT513JCA	R CHIP	1/10 51K OHM J 2012	
RC573	HRFT683JCA	R CHIP	1/10 68K OHM J 2012	
RC602	HRFT681JCA	R CHIP	1/10 680 OHM J 2012	
RC605	HRFT121JCA	R CHIP	1/10 120 OHM J 2012	
RC705	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC706	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	
RC708	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC709	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC710	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC711	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC713	HRFT122JCA	R CHIP	1/10 1.2K OHM J 2012	
RC715	HRFT332JCA	R CHIP	1/10 3.3K OHM J 2012	
RC716	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC717	HRFT512JCA	R CHIP	1/10 5.1K OHM J 2012	
RC718	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	
RC720	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC721	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC722	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC730	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC731	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC732	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC733	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC738	HRFT106JCA	R CHIP	1/10 10M OHM J 2012	
RC739	HRFT334JCA	R CHIP	1/10 330K OHM J 2012	
RC740	HRFT471JCA	R CHIP	1/10 470 OHM J 2012	
RC741	HRFT105JCA	R CHIP	1/10 1M OHM J 2012	
RC742	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RC743	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC748	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC749	HRFT821JCA	R CHIP	1/10 820 OHM J 2012	
RC751	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC755	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	
RC760	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC761	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC762	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC763	HRFT474JCA	R CHIP	1/10 470K OHM J 2012	
RC764	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RC765	HRFT683JCA	R CHIP	1/10 68K OHM J 2012	
RC767	HRFT471JCA	R CHIP	1/10 470 OHM J 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RC769	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC770	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC817	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCJ01	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ02	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ03	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ04	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ05	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ06	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ07	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ08	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ09	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ10	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ11	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ12	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ13	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ14	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ15	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ16	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ17	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ18	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ19	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCJ20	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RCN06	HRFT221JCA	R CHIP	1/10 220 OHM J 2012	
RCN07	HRFT105JCA	R CHIP	1/10 1M OHM J 2012	
RCN08	HRFT752JCA	R CHIP	1/10 7.5K OHM J 2012	
RCN09	HRFT752JCA	R CHIP	1/10 7.5K OHM J 2012	
RCN11	HRFT912JCA	R CHIP	1/10 9.1K OHM J 2012	
RCN12	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCN13	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCN14	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCN15	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN18	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN20	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN22	HRFT332JCA	R CHIP	1/10 3.3K OHM J 2012	
RCN24	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCN25	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN31	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN32	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN33	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN35	HRFT201JCA	R CHIP	1/10 200 OHM J 2012	
RCN36	HRFT273JCA	R CHIP	1/10 27K OHM J 2012	
RCN40	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	TVZ1321

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RCN44	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN47	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCN49	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN51	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN56	HRFT274JCA	R CHIP	1/10 270K OHM J 2012	
RCN68	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN69	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN70	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RCN78	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCN80	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN82	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCN83	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN84	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN85	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCN86	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCN87	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCN89	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RCU01	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RCU03	HRFT562JCA	R CHIP	1/10 5.6K OHM J 2012	
RCU04	HRFT272JCA	R CHIP	1/10 2.7K OHM J 2012	
RCU05	HRFT183JCA	R CHIP	1/10 18K OHM J 2012	
RCU06	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RCU08	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCU09	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCU10	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCU12	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RCU13	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCU14	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCU15	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RCU17	HRFT105JCA	R CHIP	1/10 1M OHM J 2012	
RCU18	HRFT822JCA	R CHIP	1/10 8.2K OHM J 2012	
RCU19	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012	
RCU20	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RCU21	HRFT123JCA	R CHIP	1/10 12K OHM J 2012	
RCU22	HRFT334JCA	R CHIP	1/10 330K OHM J 2012	
RCU23	HRFT121JCA	R CHIP	1/10 120 OHM J 2012	
RCU26	HRFT272JCA	R CHIP	1/10 2.7K OHM J 2012	
RCU27	HRFT561JCA	R CHIP	1/10 560 OHM J 2012	
RCU28	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RCU29	HRFT100JCA	R CHIP	1/10 10 OHM J 2012	
RCU30	HRFT100JCA	R CHIP	1/10 10 OHM J 2012	
RCU33	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RCU34	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RLY1	5SC0101328	SW RELAY	SDT-SS-112DM	⚠
RN05	RD-AZ391J-	R CARBON FILM	1/6 390 OHM J	
RN10	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN16	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RN17	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN19	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
RN21	RS02Z399JS	R M-OXIDE FILM	2W 3.9 OHM J SMALL	
RN27	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN28	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN29	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN34	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN37	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN38	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN39	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN43	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN44	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RN45	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN46	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RN48	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J	
RN50	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN53	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RN54	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RN55	RD-AZ274J-	R CARBON FILM	1/6 270K OHM J	
RN57	RD-4Z151J-	R CARBON FILM	1/4 150 OHM J	
RN58	RD-4Z151J-	R CARBON FILM	1/4 150 OHM J	
RN60	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN61	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN62	RD-AZ273J-	R CARBON FILM	1/6 27K OHM J	
RN65	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
RN66	RD-AZ182J-	R CARBON FILM	1/6 1.8K OHM J	
RN67	RD-AZ182J-	R CARBON FILM	1/6 1.8K OHM J	
RN71	RN-AZ2001F	R METAL FILM	1/6 2.0K OHM F	
RN72	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
RN73	RN-AZ9101F	R METAL FILM	1/6 9.1K OHM F	
RN74	RN-AZ3901F	R METAL FILM	1/6 3.90K OHM F	
RN75	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RN76	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J	
RN77	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J	
RN79	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN81	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RN90	RV5426473P	R SEMI FIXED	RH0638C 47K OHM B	
RN91	RD-AZ224J-	R CARBON FILM	1/6 220K OHM J	TVZ1341
RN92	RD-AZ224J-	R CARBON FILM	1/6 220K OHM J	TVZ1341

LOC.	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RN94	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RN95	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RN96	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RN97	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RN98	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RN99	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RU02	RD-AZ333J-	R CARBON FILM	1/6 33K OHM J	
RU07	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J	
RU11	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RU13	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J	
RU16	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J	
RU24	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J	
RU25	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
RU31	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J	
RU32	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J	
RU57	RV5426204P	R SEMI FIXED	EVN-DJA A03 200K OHM B	
SN03	TST5811—	TR PHOTO	ST-5811	
SN04	TST5811—	TR PHOTO	ST-5811	
SW01	5SB0101166	SW TACT	KPT-1105A	
T801	50M4242A3-	TRANS SMPS	TSM-4242A3	
U101	4859715330	TUNER VARACTOR	DT9-NF03F	
X501	NCSB503F18	RESONATOR CERA	CSB503F18	
X502	5XEX3R579C	CRYSTAL QUARTZ	HC-49U 3.579545M 20PPM TA	
X701	5XYR03276C	CRYSTAL QUARTZ	S0-38 32.768000KHZ 20PPM	
X702	5XE8R0000E	CRYSTAL QUARTZ	HC-49/U 8.000000MHZ 30PPM	
XN01	5XE10R000E	CRYSTAL QUARTZ	HC-49/U 10.00000MHZ 30PPM	
Z101	5PDSW1003S	FILTER SAW	DSW 1003S	
Z102	5PXPS45MB-	FILTER CERA	TPS-4.5MB TRAP (TAPPING)	
Z103	5PXFH4R5M	FILTER CERA	SFSH4.5MCB-TF21 TAPING	
Z801	DSVC271D14	VARISTOR	SVC271D14A	⚠

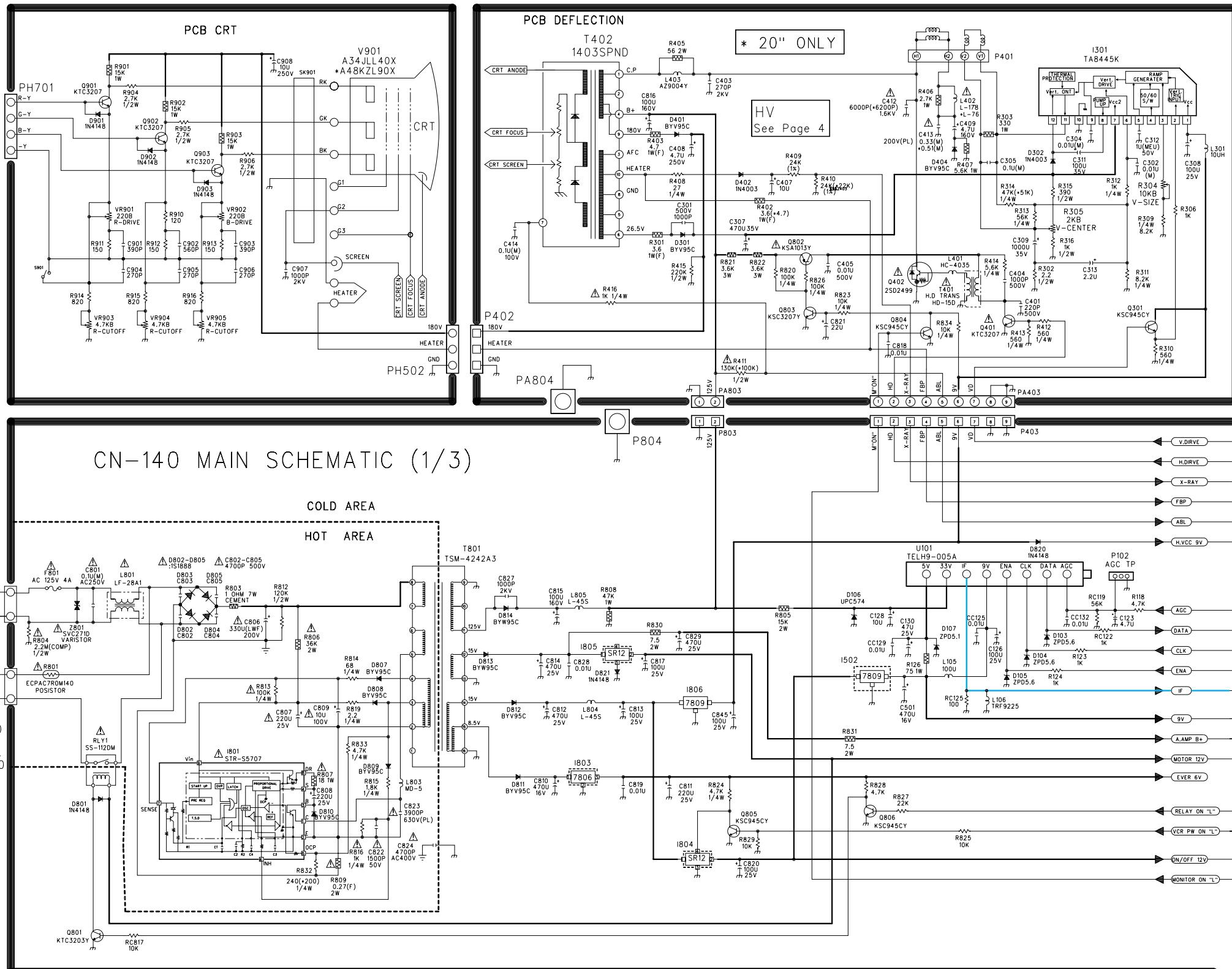


The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance(servicing) instructions in the literature accompanying the appliance.

The parts identified by  mark are critical for safety.  
Replace only with the part number specified.

**NOTE)**  **Warning**  
Parts that are shaded are critical  
with respect to risk of fire and  
electrical shock.

**NOTE**)  Symbol denotes AC ground  
 Symbol denotes DC chassis ground



<1> CAUTION

THE COMPONENTS MARKED WITH △  
ON THE SCHEMATIC DIAGRAM  
WITH HAVE SPECIAL CHARACTERISTICS  
IMPORTANT FOR SAFETY AND SHOULD BE  
REPLACED ONLY WITH TYPES IDENTICAL  
TO THOSE IN ORIGINAL CIRCUIT OR  
SPECIFIED IN THE PARTS LIST.  
DO NOT DEGRADE THE SAFETY OF THE  
RECEIVER THROUGH IMPROPER SERVICING

<2> WARNING

BEFOR SERVICING THIS CHASSIS  
READ THE "X-RAY RADIATION",  
"SAFETY PRECAUTION" AND "PRODUCT  
SAFETY NOTICE" IN THE SERVICE MANUAL

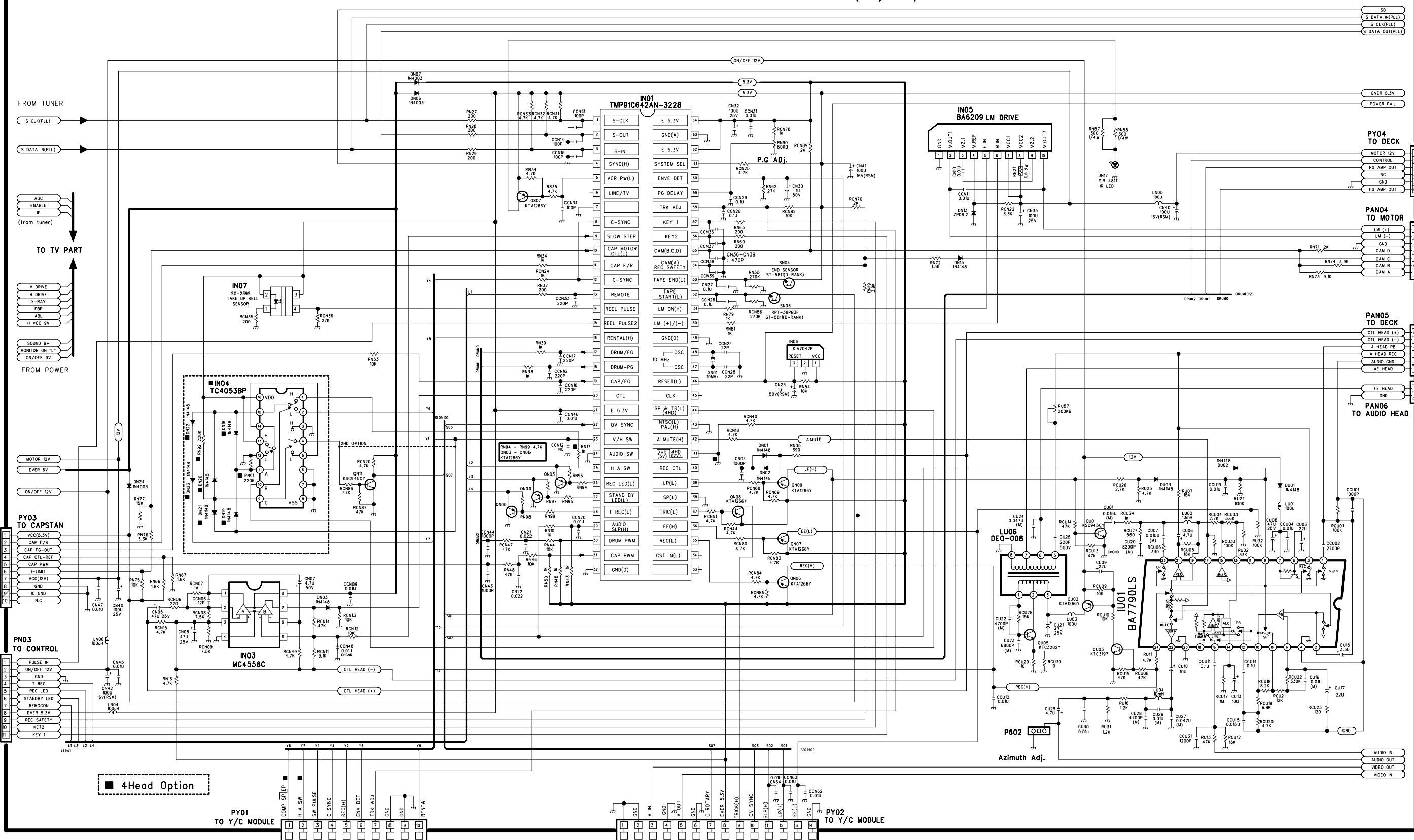
### <3> CAUTION TO THE SERVICE TECHNICIANS

BEFORE RETURNING THE RECEIVER TO THE  
CUSTOMER MAKE APPROPRIATE LEAKAGE  
CURRENT OR RESISTANCE MEASUREMENTS  
DETERMINE THAT EXPOSED PARTS ARE  
ISOLATED

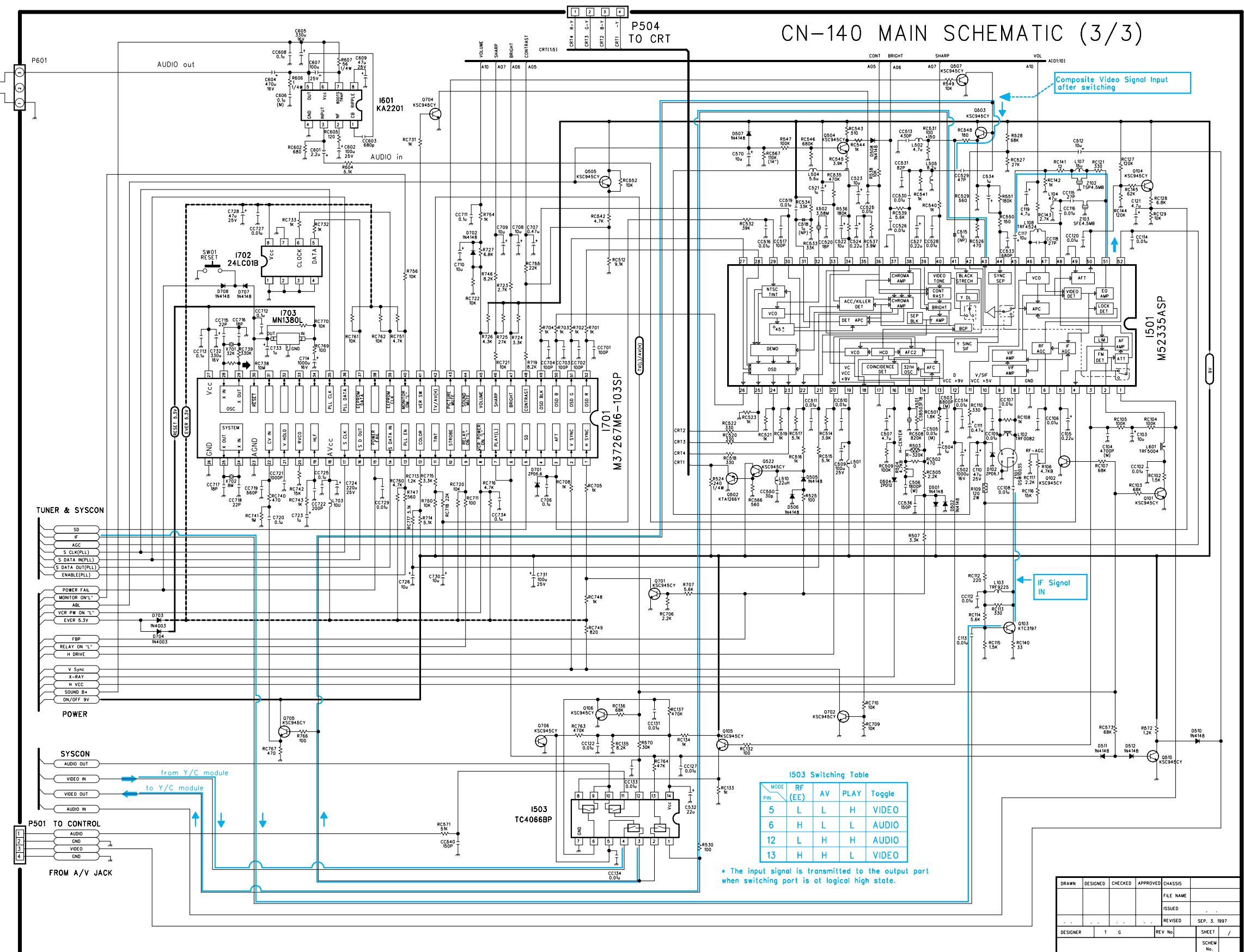
- <4> NOTES

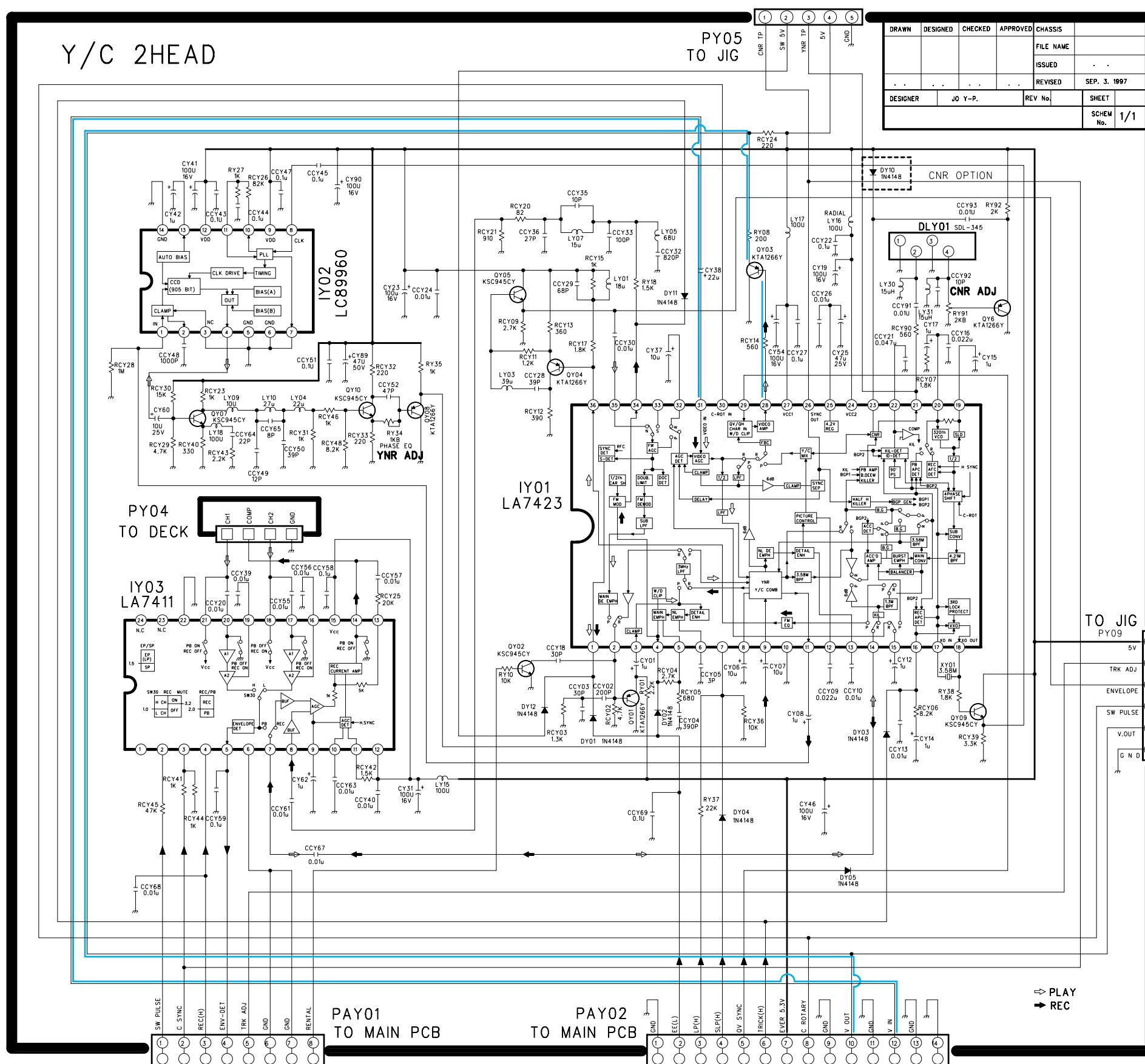
- . RESISTANCE IS SHOWN IN OHM.  
(K=1000, M=1000000)
  - . UNLESS OTHERWISE NOTED ON THE SCHEMATIC ALL CAPACITOR VALUES LESS THAN 1 ARE EXPRESSED IN  $\mu$ F AND THE VALUES MORE THAN 1 IN pF
  - . VOLTAGE READ WITH "V.T.V.M"  
FROM POINT INDICATED TO CHASSIS GROUND USING A COLOR BAR SIGNAL WITH ALL CONTROLS AT NORMAL LINE 120 VOLTS AC.  
VOLTAGE READING SHOWN ARE NORMAL.  
VALUES AND MAY VARY +20% EXCEPT H.V.
  - . THIS CIRCUIT DIAGRAM IS  
A STANRD ONE.  
CIRCUITS PRINTED MAY BE SUBJECT TO CHANGE FOR PRODUCT IMPROVEMENT WITHOUT PRIOR NOTICE.

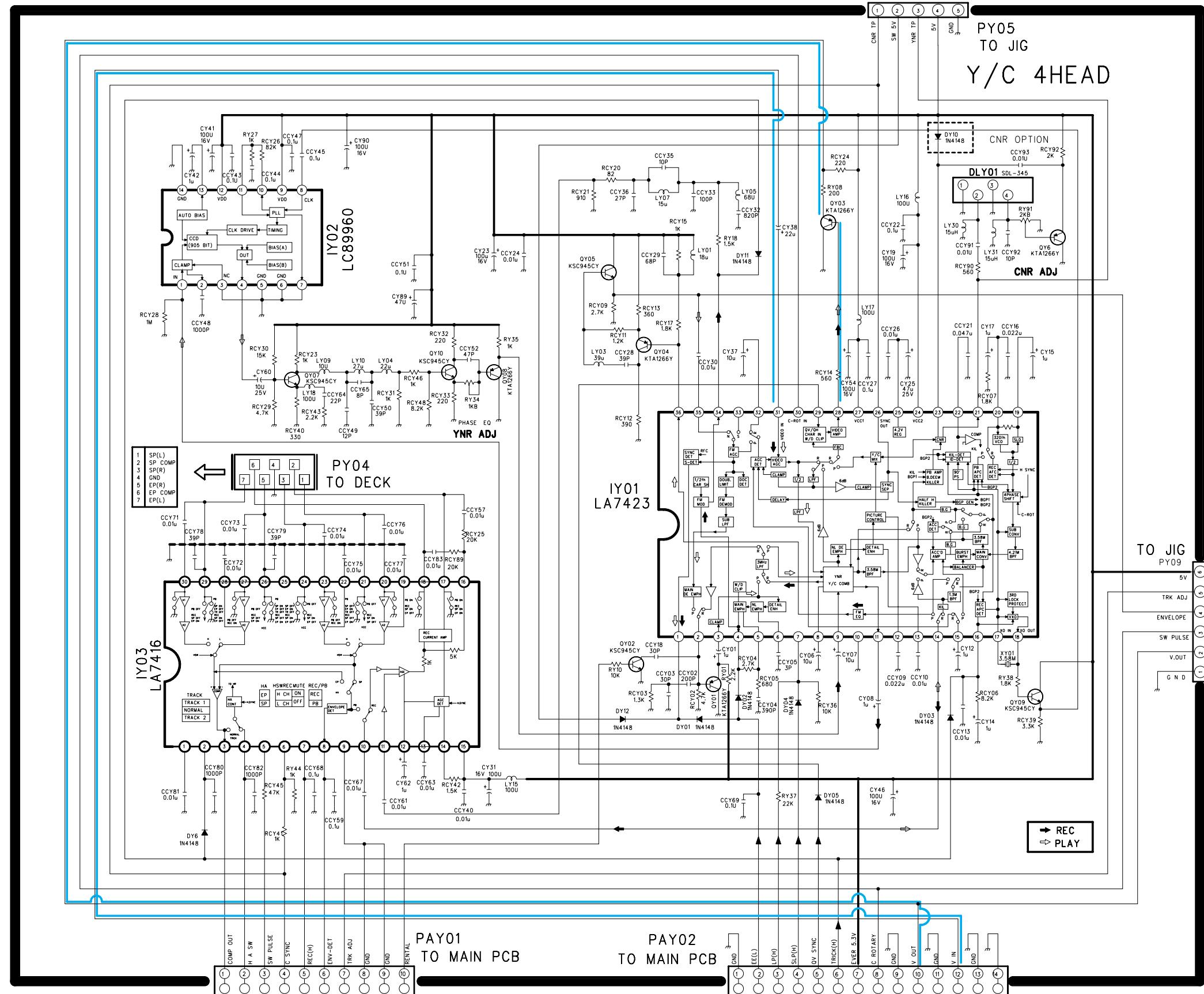
# CN-140 MAIN SCHEMATIC (2 / 3)

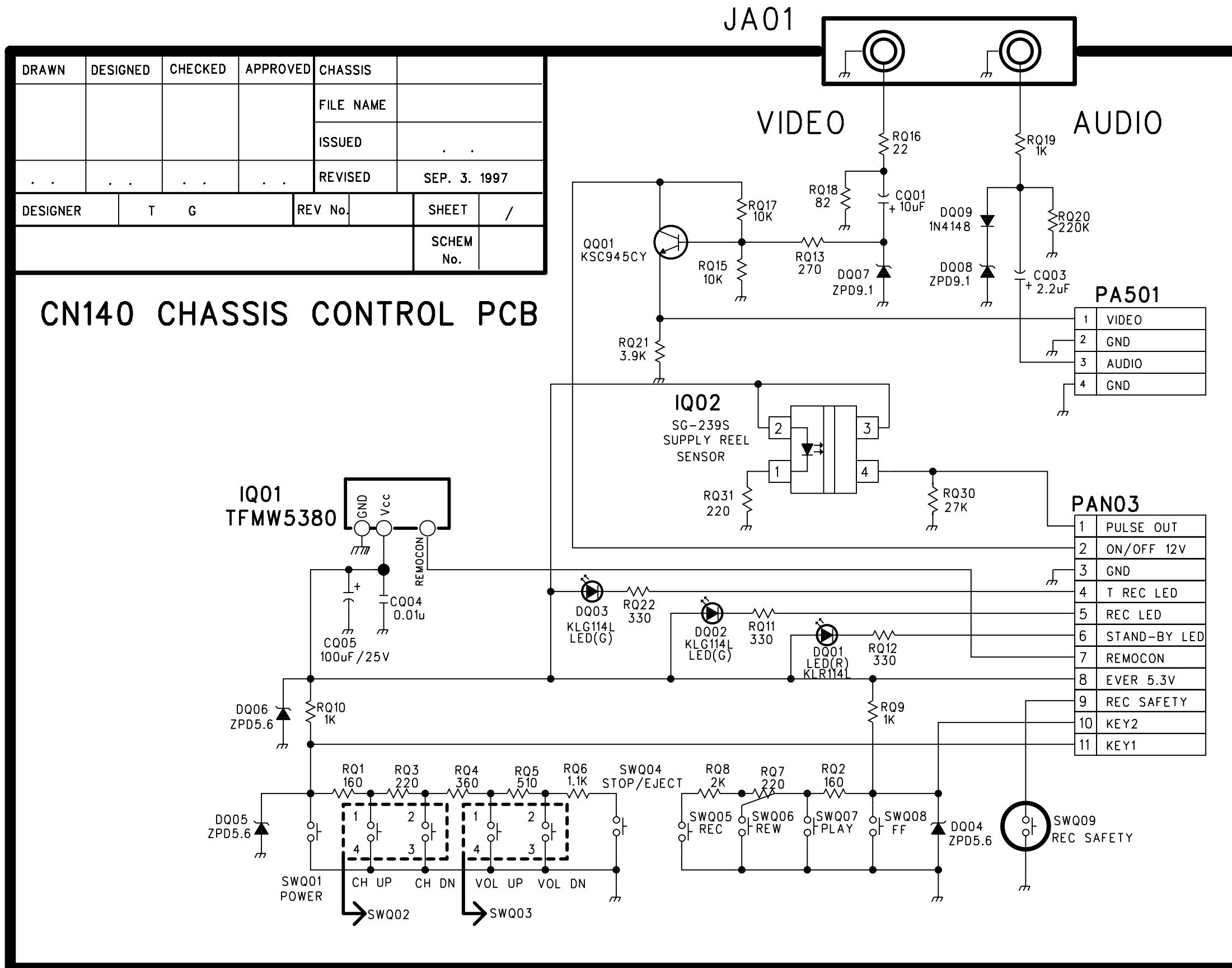


# CN-140 MAIN SCHEMATIC (3/3)



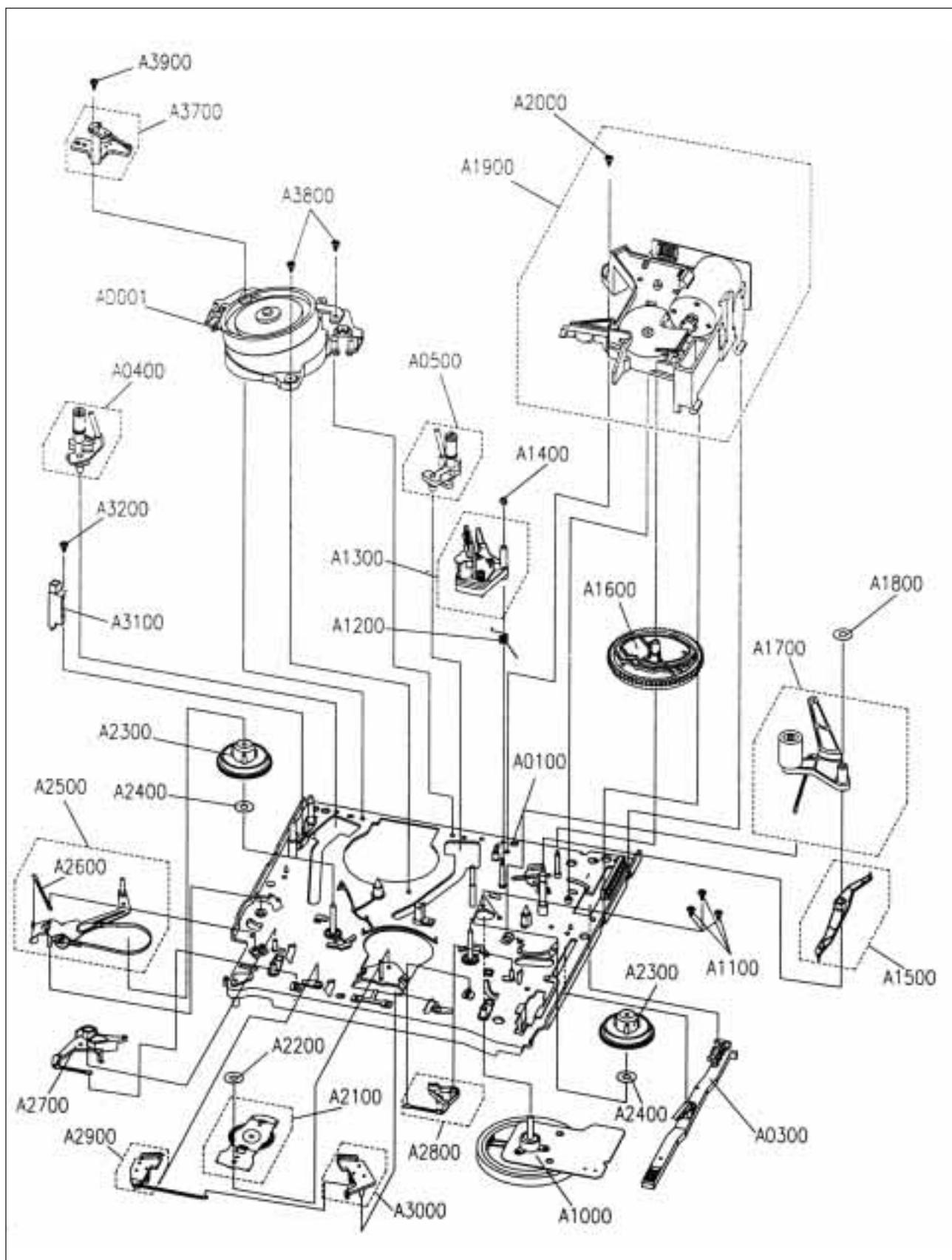




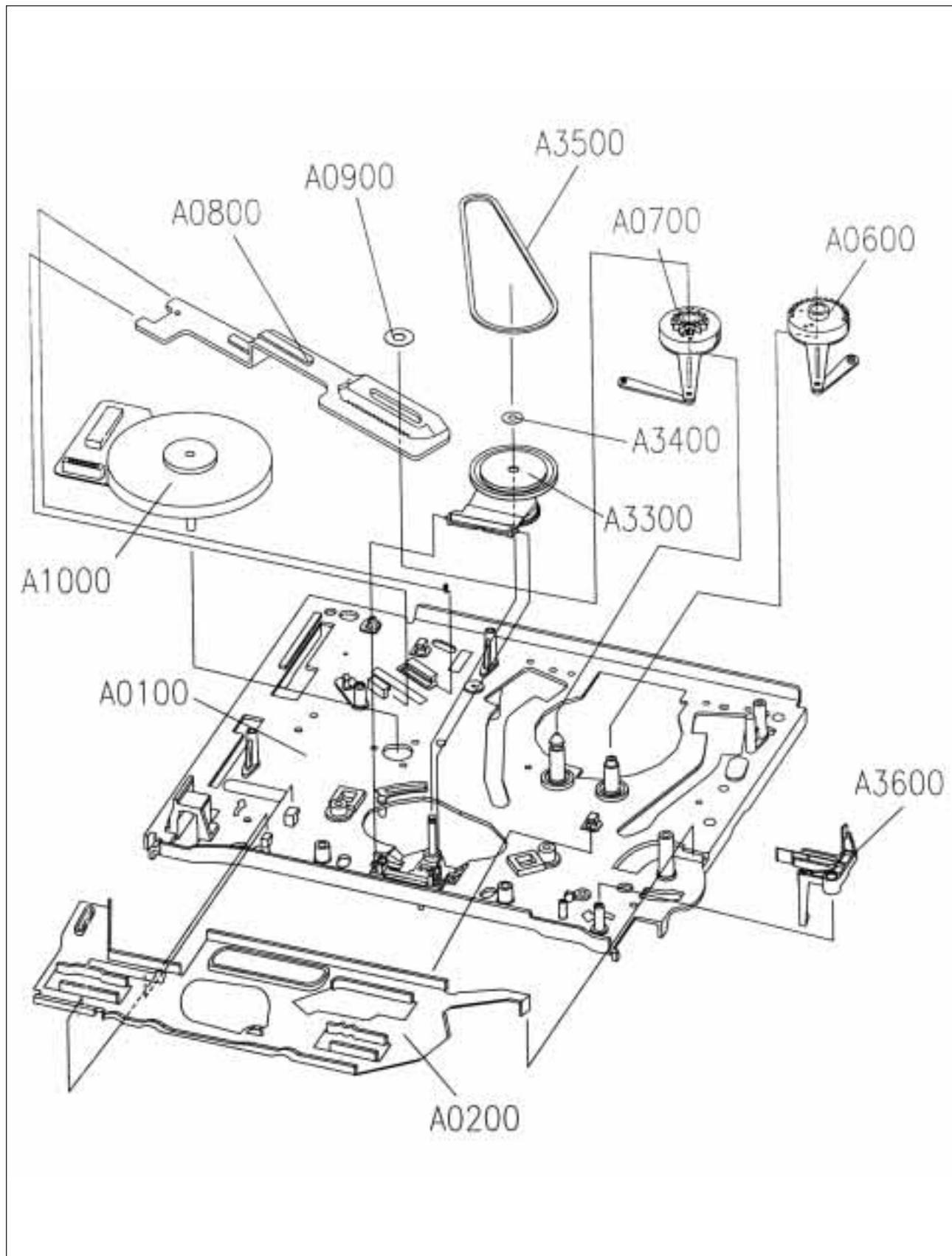


# ■ EXPLODED VIEW AND SERVICE PARTS LIST

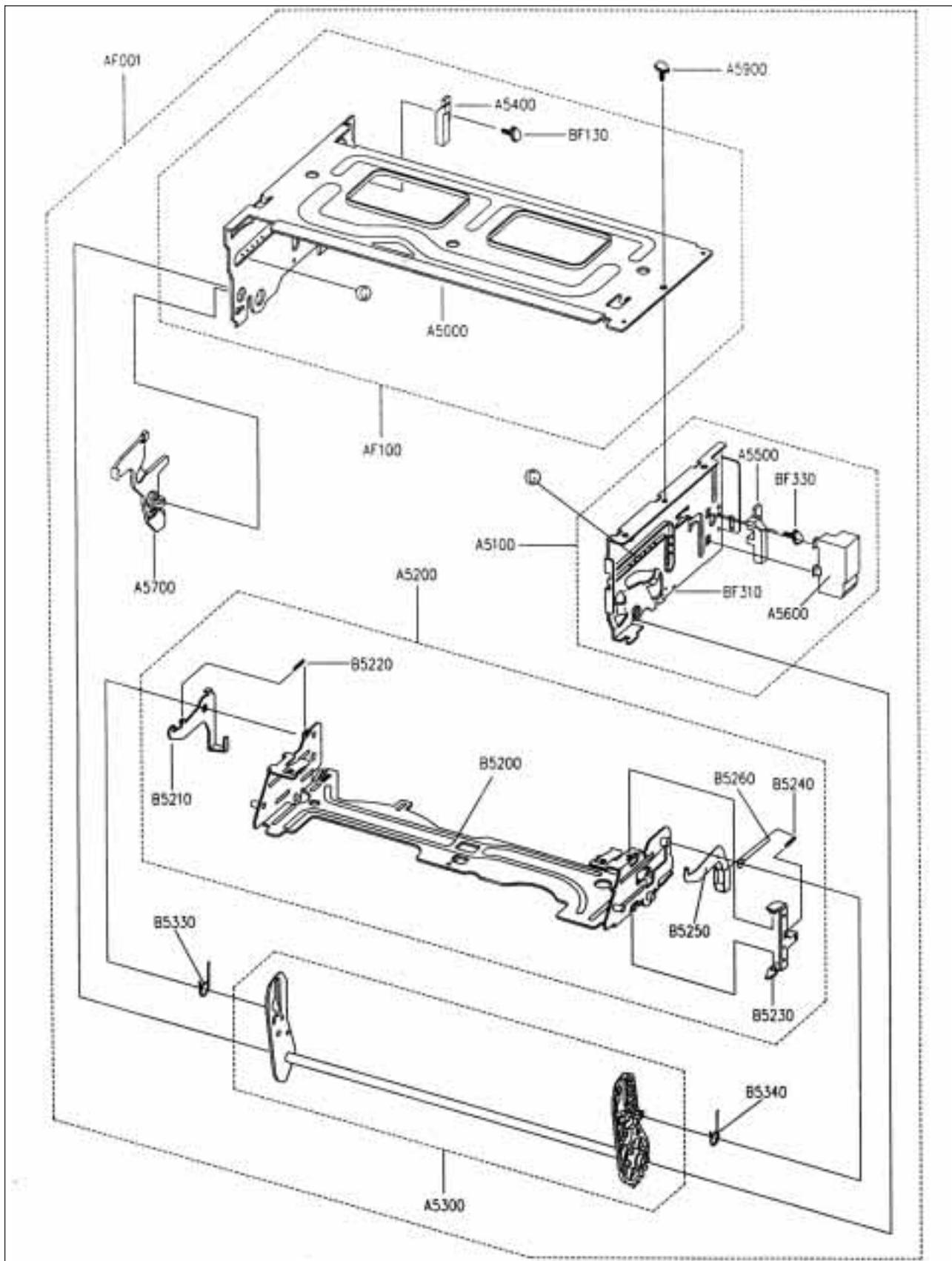
## 1-1. EXPLODED VIEW OF DECK ASS'Y (TOP VIEW)



## 1-2. EXPLODED VIEW OF DECK ASS'Y (BOTTOM VIEW)



### 1-3. EXPLODED VIEW OF F/L ASS'Y



## 1-4. SERVICE PARTS LIST OF DECK ASS'Y

LOC	S/N	DESCRIPTION	REMARK	MODEL
M01	4851923800	DECK AS	K-MECHA 2HD	TVZ-1321
M01	4851927200	DECK AS	K-MECHA 4HD	TVZ-1341/1341X
AD001	97PA255101	DRUM PRICE ASS' Y	(2HD SP/EP NON DLC MONO)	TVZ-1321
AD001	97PA251801	DRUM PRICE ASS' Y	(4HD NON DLC MONO)	TVZ-1341/1341X
AF001	97SA251400	F/L AS	K-MECHA	ALL MODEL
A0100	97SA309700	MAIN BASE AS	K-MECHA	"
A0200	97S0901400	PLATE CONNECT	SECC T1.0	"
A0300	97S2701800	RACK F/L	PBT(KP213G30) NATURAL	"
A0400	97SA310900	S SLANT POLE AS	K-MECHA	"
A0500	97SA311000	T SLANT POLE AS	K-MECHA	"
A0600	97SA308500	L LOADING AS	K-MECHA	"
A0700	97SA308600	R LOADING AS	K-MECHA	"
A0800	97SA308400	LOADING LACK AS	K-MECHA	"
A0900	97S3101800	WASHER POLY	K-MECHA	"
A1000	97S8100700	MOTOR CAPSTAN	F2QTB12	"
A1000	97S8100800	MOTOR CAPSTAN	DMVCMC06D	"
A1100	97S3102000	SCREW TAPITITE	P-TITE 2.6X7 MFZN	"
A1200	97S3004000	SPG AC HEAD	SUS304WPB D1.2	"
A1300	97SA311200	AC HEAD AS	K-MECHA	"
A1400	7391300211	NUT HEX	6N-1-5 MFZN	"
A1500	97S2604100	LEVER RELAY	ZDC-2	"
A1600	97S2701400	GEAR CAM	DELIN 100 BLACK	"
A1700	97SA310700	PINCH LEVER TOTAL AS	K-MECHA	"
A1800	97S3117300	WASHER POLY	D3.6XD8XT0.5	"
A1900	97SA310400	L/C BRKT TOT AS	K-MECHA	"
A2000	7274300611	SCREW TAPITITE	TT3 RND 3X6 MFZN	"
A2100	97SA311600	IDLER PLATE AS	K-MECHA	"
A2200	97S3108200	POLY WASHER	D2.6XD8XT0.5	"
A2300	97S2901600	TABLE REEL	POM(KEPITAL F20) BLACK	"
A2400	97S3903600	POLY SLIDER	D3.1XD6XT0.5	"
A2500	97SA310800	TENSION BAND AS	K-MECHA	"
A2600	97S3003500	SPG TENSION	SWPB D0.4	"
A2700	97SA309300	S SUB BRAKE AS	K-MECHA	"
A2800	97SA309400	T SUB BRAKE AS	K-MECHA	"
A2900	97SA309100	S MAIN BRAKE AS	K-MECHA	"
A3000	97SA309200	T MAIN BRAKE AS	K-MECHA	"
A3100	97S8012900	HEAD FE	HVFHF0004AK	"
A3200	97S3102100	SCREW TAPITITE	P-TITE 2.6X10 MFZN	"
A3300	97SA309000	REEL GEAR TOT AS	K-MECHA	"
A3400	97S3108200	POLY WASHER	D2.6XD6.0XT0.5	"
A3500	97S5500400	BELT REEL	CR73	"
A3600	97S2603500	LEVER RECORD SAFETY	F20-03 NATURAL	"
A3700	97SB381100	EARTH BRACKET AS	G-MECHA, K-MECHA	"
A3800	7274301011	SCREW TAPITITE	TT3 RND 3X10 MFZN	"
A3900	7274301211	SCREW TAPITITE	TT3 RND 3X12 MFZN	"
A4000	7274300611	SCREW TAPITITE	TT3 RND 3X6 MFZN	"
A4100	2291129004	OIL LUBRICANT	OA-305A	"
A4200	2291131304	GREASE	DELUXE 5221G(NAM-YOUNG)+D23	"

## ENGINEER NOTE

**DAEWOO**

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S/M NO : CN140N-020

PRINTED DATE: APR. 1997